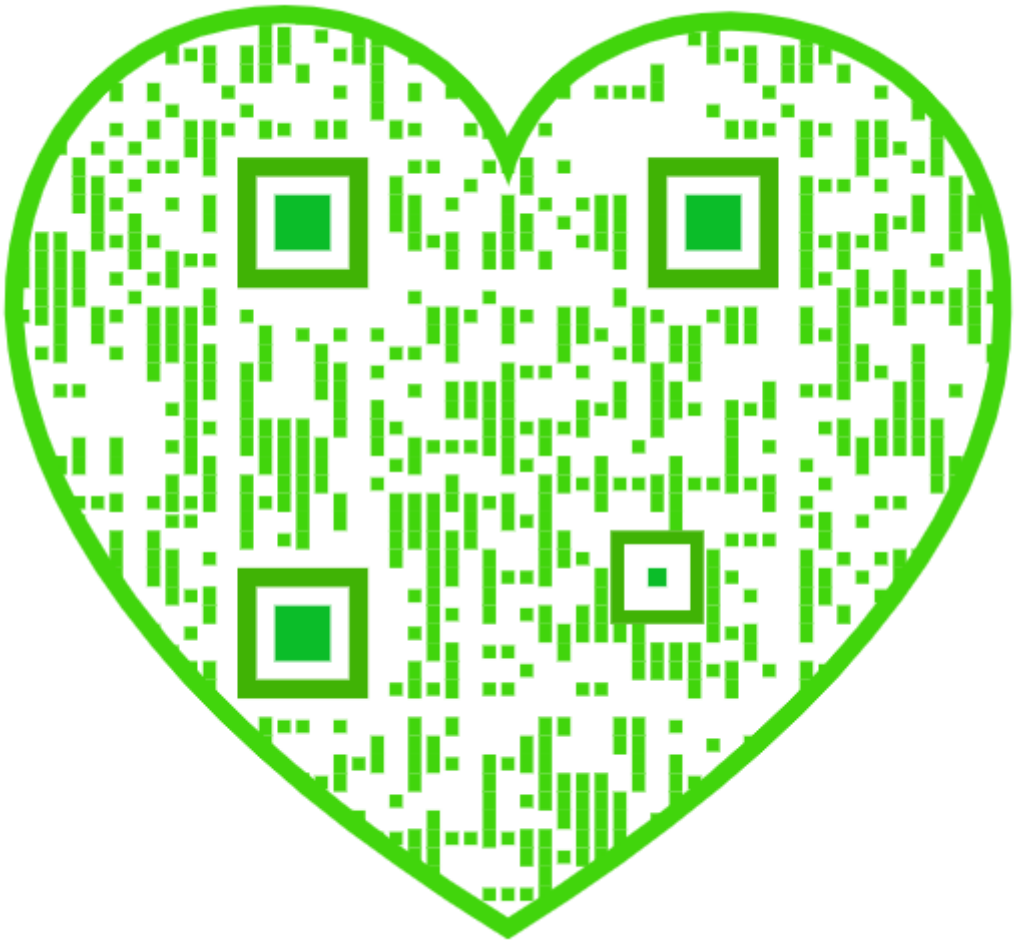
NYPL RESEARCH LIBRARIES
3 3433 08191079 0



THE

RUDIMENTS

OF

DRAWING

Cabinet and Upholstery Furniture:

COMPRISING

INSTRUCTIONS

FOR DESIGNING AND DELINEATING THE DIFFERENT ARTICLES OF THOSE BRANCHES GEOMETRICALLY AND PERSPECTIVELY;

THEREBY PRODUCING THE EFFECT EACH WILL HAVE WHEN EXECUTED: AND SHEWING BY A SCALE THE REAL MEASURES FOR THE WORKMAN.

ILLUSTRATED BY

Appropriate Diagrams and Designs,

PROPORTIONED UPON ARCHITECTURAL PRINCIPLES,

AFTER THE MANNER OF THE ANTIQUE,

ON TWENTY-FIVE PLATES,

EACH ACCOMPANIED WITH EXPLANATORY REMARKS.

The Second Edition, Improved.

By RICHARD BROWN.

LONDON:

PRINTED FOR M. TAYLOR,

NEPHEW AND SUCCESSOR TO THE LATE JOSIAH TAYLOR,

6 BARNARD'S INN, HOLBORN.

1835.

SEP 1 7 1943

PREFACE.

In the prefatory address of every book that is presented to the public, there ought to be given all the requisite information of its intention and use. It may, therefore, be observed, that this is not one of those works whose utility ceases when the fashions change, but is intended for lasting benefit, and to afford instruction at all times, under every such vicissitude, in the first principles of designing Furniture, with its ornaments, appropriately; to enable Cabinet-makers to delineate their own designs for inspection, and in detail, so that the workman may execute from them; and to elucidate the nature and general properties of perspective, as peculiarly applied to that branch of mechanical art.

When a source is once opened, it is surprising to perceive how it diffuses itself into various channels; and the extensive latitude of a science in its application, when first discovered, is incalculable. This was originally the case with perspective, for only a few years ago it was confined to the higher department of art: it is now, however, found to be of the utmost importance to the cabinet-maker, and is learned with equal avidity by artisans of every description. The reason is obvious; if a mechanic is required to give a design to his employer, or has to execute a new and extraordinary piece of work, how is it possible that the employer or workman can effectually understand the article intended without a drawing? This the artisan not being able to perform, betrays

a deficiency of knowledge in his trade, which no doubt many an intelligent person has disadvantageously experienced: this, were it the only circumstance, must sufficiently point out the utility of the present undertaking.

The writers on the subject of cabinet furniture have been comparatively few; and the books hitherto published containing merely designs for furniture, and not rudiments, gave rise to the present work. It is true that Chippendale and Sheraton have given rules for drawing; but the ideas of their trivial compositions being taken from the models of the French school of about the middle of the last century, now obsolete, has entirely discouraged cabinet-makers from investigating the principles employed in their delineations: and if they were so disposed, the latter author, who is the one most worthy of notice, has rendered wholly unintelligible most of the different figures in his work; destroying the utility of his examples by entangling the vanishing points, and crossing the diagrams in a confused and cobweb-like manner, whereby it is utterly impossible for the student to trace the proposed figure without being lost in a labyrinth of lines. The failure of many scientific authors has, without doubt, originated either from the supposition, that because their schemes were clear to themselves they must necessarily be so to others, or from a greater desire to display their own mathematical knowledge than to instruct the young practitioner.

As it is not so easy to convey our ideas clearly and forcibly in print as by verbal instruction, all didactic treatises should be written with the utmost perspicuity, and as succinctly as possible, particularly works containing diagrams with letters of reference; for, as it requires the utmost attention, the student finds it difficult to follow the explanation. From this consideration, the geometrical parts are here connected with the perspective objects themselves, so as to be understood in the delineation almost without references.

Throughout the work the parallel position of the articles is adopted (two plates alone excepted), it being a kind of working perspective, which for furniture looks far better than the angular position, unless the distance be very remote: and here it may be necessary to observe, that the nearer objects, when drawn in perspective, approach to their geometrical form, the more natural the delineation will appear; for, according to the laws of perspective, we must confine ourselves to the point of distance assumed by the draughtsman while taking the view, whereas the spectator will probably inspect the picture from many points. Objects may be delineated in perspective by two distinct methods: one by having the plan, which is universally explained in my former work, adapted to architectural purposes; the other has its known *measures* and inclination to the line of projection, which is principally adapted to furniture and architecture.

With reference to the designs, an endeavour has been made to render them not only classical but new and tasteful. Although furniture has been turned *into* so many different forms, as to make it a difficult task to produce any thing novel (but where the principles of delineation are chiefly intended, the design may certainly be considered of secondary consideration); yet this has been so far attended to, as to make the articles more inviting than those of former authors, as well as to stimulate the cabinet-maker to the study of this useful and elegant art. Shadowing the articles correctly, and compounding colours, so as to imitate the various woods used in this branch, are also treated of, which will be found of great advantage in giving drawings their natural effect: the latter of these have been wholly omitted by other writers. And here it may not be improper to remark, that some cabinet-makers are continually exclaiming against the designs given in books being too expensive for execution; not knowing, in fact, that those very books are only intended for the purposes of composition and selection. If this should be urged against the

present work by those whose object is to execute a piece of furniture entirely from a book, I have no hesitation in saying, that such persons are more fitted for works of mere imitation than of genius. As a multitude of designs would have enhanced the price of the work, which must consequently have greatly defeated its intended purpose, such articles are therefore introduced which contain the most prominent features, or are difficult of delineation, and which embody the more simple forms; for it is not by copying particulars, but by attending to principles, that lessons become instructive.

Lastly, that which is useful is an object of desire previous to that which is refined and polite; elegance, being an advance on utility; for, no sooner are our necessities supplied, than we turn our thoughts to whatever appears in life convenient, agreeable, or ornamental. Survey a magnificent apartment, and you will see, that neither the embellishments in the furniture, nor the room itself, can be executed with appropriate symmetry, not to mention feeling and taste, without a classical knowledge: how then can the artisan design without being acquainted with the rudiments of drawing? Fitness, proportion, and classification of ornaments, which are the very soul of design, should be observed in every article of furniture; for, if unappropriate to its use, disproportioned in its parts, or extravagant in its contrivance, if confused or wild in its distribution of ornaments, such furniture cannot please the judicious eye; and as by the sense of that organ the far greater part of our ideas respecting forms are transmitted to the mind, and the taste and fashion of cabinet furniture have undergone, and are ever undergoing, such material changes, it becomes of considerable importance to the cabinet-maker to improve to the utmost his knowledge in drawing and designing.

Wells Street, Oxford Street,
June, 1822.

CONTENTS.

PLATE.		PAGE.
	Preliminary Discourse	ix
	Geometrical Definitions	1
I.	Problems in Practical Geometry	3
	Definitions of Perspective Terms	7
II.	Preliminary Observations on Perspective	10
III.	Problems in Practical Perspective	14
IV.	Examples in Practical Perspective	19
V.	Examples in Practical Perspective	23
	Rudiments of drawing Cabinet Furniture.	
VI.	Dining-Room Chair and Footstool	29
VII.	Library and Withdrawing-Room Chairs	30
VIII.	A Loo-Table	32
IX.	Sofa Writing-Table	33
X.	A Library-Table	34
XI.	A Dining-Table	36
XII.	A Sofa	37
XIII.	An Ottoman	39
XIV.	A Dressing-Table	40
XV.	*Window* Seat	41
XVI.	*Cheval* Dressing-Glass	43
XVII.	Pier Commode and Glass	44
XVIII.	Lady's Book-Case with Cabinet	45
XIX.	A Sideboard	47
XX.	A Cot Bed	48
XXI.	A Four-Post Bed	49
XXII.	Drawing-Room Window Drapery	50
XXIII.	A Library developed	52
XXIV.	Library in linear Perspective	53
XXV.	The Library finished	54
	Rudiments of Drawing	56
	Rudiments of Shadowing	59
	Rudiments of Colouring	62
	How to mount Drawings	65
	Method of putting up a French Window Curtain	67
	Method of making and using the French Polish	*ib.*
	Conclusion	68

PRELIMINARY DISCOURSE.

THERE is reason to believe, that, among the first essays of human skill, the knowledge of design had a principal place, as it is natural for the hand to form some kind of imitation of what the eye beholds. If this supposition be just, the *art of* drawing may claim an origin of the remotest antiquity. It is certain, however, that the recent improvements in Furniture are the results of this acquirement, aided by the study of those *chef-d'œuvres* of antiquity lately transmitted to us in the works of English and French travellers, which relics present the costume *of ancient* times, and shew the mode in which the forms of nature may be happily adapted to the various requisites of modern life, and advanced by a comparison with, and application to, Nature herself, which contains the first elements and the first models of all the perfections of art.

The Egyptians, by the adoption of the pyramidal form, seem to have intended their works to outlast all record; but their productions are more to be admired for their sublimity than true elegance, and are more appropriate to monumental purposes than to furniture for apartments. The Greeks, who are well known to have studied from these models, have displayed a taste hitherto unequalled, and that fills the enlightened world with admiration. They appear to have had just reasons for every accompanying ornament, to have aimed at a flowing and graceful outline, and to have disposed the parts in masses, as a rest for the eye, that the whole of their compositions should appear distinct and without confusion. They have neither overloaded their designs, nor left them any where deficient; and every member relieves its adjacent one by a breadth and repose of

surface, distinctness, and contrast of outline, the opposition of one part plain with another enriched; and the harmony and significance of the accessories stamp on their works a lasting, chaste, and pleasing effect. The pompous Romans have covered every part of their works with ornaments in wanton profusion, so as to fritter away the outlines of their mouldings, and render their productions one undistinguishable mass of enrichment.

Before the cabinet-makers were acquainted with the works of the Greek school, and had acquired a knowledge of drawing, their designs were made up of the most trivial conceits; the artisans being mere plodding mechanics, they went on in one perpetual round of unvarying sameness; their furniture was consequently quite void of taste, and the inanity and tameness of their forms and appendages tired both the eye and the mind, and labour was wasted upon transient whims or puerile fashion. But within these few years, their productions have assumed a new character, bold in the outline, rich and chaste in the ornaments, and durable from the rejection of little parts. This style, although in too many instances resembling the Grecian tombs, has evidently arisen in a great measure from Mr. Hope's mythological work on Household Furniture, Mr. Smith's excellent book of Unique Designs, and Percier's splendid French work on Interior Decoration; but unfortunately these books, one from the great number of designs it contains, and the others from the largeness of the paper on which they are printed, are rendered very expensive.

Previous to the cabinet-maker designing appropriately, it is necessary that he should be aided by a store of classic literature, to suggest to him ideas, as well as an accurate knowledge of drawing objects animate and inanimate: also a minute observation is requisite, even of the most trifling parts, of antique sculpture and architecture, that he may become qualified to select and compose: from such observations as these, will arise new forms in an endless variety, according to the taste and judgment of the designer, not by taking the exact model or imitation of the object, but the spirit and principle on which the original was formed. This study may likewise be assisted by a reference to books of antiquities, such as Piranesi's, Hamilton's, Tatham's, and Moses'. Beautiful and novel forms may also be observed in the drawings by Gandy, very

suitable to cabinet work; likewise a sight of objects deposited in the British Museum will materially advance this desideratum, and enable cabinet-makers to execute articles that will produce striking and pleasing effects; for the beauty of the antique consists in classification of design and purity of ornament, which can never fail to merit the praise and encouragement of the gentleman and man of taste. "Different articles," observes Mr. Hope, "however simple be their texture, and however mean be their destination, are capable of enhancing and uniting with the more essential requisites of utility and comfort, for which every article of furniture is more immediately framed, and with which it can consequently on no account dispense. A certain number of secondary attributes of elegance and beauty may enable its shape and accessories to offer additional gratification both to the eye and to the imagination; such as flowers and vegetables, the honeysuckle, the lotus, the reed, the thistle, allusions of mythology, symbolic personifications of attributes, and insignia of gods and of men; of instruments, of trophies, caryatides, griffins, chimeras, termini, scenic masks, sacrificial implements, and civil and military emblems; which gave to the ancient furniture at once grace, variety, movement, expression, and physiognomy, so much so as to have afforded to the eye and to the mind the most luxuriant and uncloying delight."

Although the Greeks appear to have collected all the sublime and beautiful objects in nature, so as to leave comparatively nothing for the moderns, and we are obliged to adopt their component parts, yet, remember, all is not good that is Grecian, for the Greeks were fallible as well as ourselves: it is therefore no excuse, if bad examples are chosen, because precedents can be brought for them. It is a common opinion, that all the productions of antiquity are perfect and worthy of imitation; a notion which is so far from being true, that it will not hold with regard to several performances even of the best æras. Notwithstanding what is now to be executed must in the detail be selected from the ancients, yet the parts must be so classed, and the objects so embodied, as not to have the similitude of an object already existing, and it must be one that will confer on the composer the merit of almost a new work. We may take a moulding, or an ornament, or a column, but we must not take the whole of the original object, and call it our own design. As furniture is always best studied upon the principles and proportions

of architecture, it being essential towards producing grandeur of effect in apartments elegant and spacious; for without this, although beauty may be obtained, a grand style never can be produced; a knowledge of architecture, therefore, so far as relates to the general proportions of the five orders, should be acquired: this science, when once obtained, will produce a taste for uniformity, and its rules enable those who devote a portion of their time to its study, to lay down plans in proportion; a knowledge indispensably necessary to the cabinet-maker, as well as to the architect.

Whatever ornaments are introduced into furniture should always be rich, graceful, and consistent, and not of the vulgar kind: the quadrangular passion-flower, for instance, is extremely rich, the sun-flower vulgar, although we frequently see it introduced, with dolphins, darts, shells, and other incongruous appendages, on the poles of window-curtains. But the modern upholsterer and cabinet-maker now apparently try how disgusting and preposterous, as well as hideous, they can render our apartments, by the introduction of serpents and other obnoxious reptiles, to which we have a natural antipathy. There is yet another very important part in designing furniture, in which the cabinet-maker ought to be skilful—that of harmonizing metals with woods, so as not to overload the articles with buhl, bronze, or or-moulu, which is too frequently to be seen. Modelling in clay he should also be acquainted with, for the least complicated and the least significant of shapes borrowed from the mere inanimate creation, as soon as they are to present a rounded and an evanescent contour, cannot well be executed in relief from mere lines traced on a plane or flat surface, however accurately these lines be drawn, with any degree of precision and truth. Caryatides, although they may look well in a drawing, do not always look well in execution; for in a drawing we have an idea of the real size of the figure, whereas, when executed, they appear to resemble a carved walking-stick. It may further be remarked, that many cabinet-makers, for the sake of notoriety, ridiculously give names to furniture quite inconsistent, such as Trafalgar chairs, Waterloo feet, &c.

Chippendale, who was the first author that began to urge the necessity of cabinet-makers studying perspective-drawing, observes that, without some know-

ledge of the rules of this science, the cabinet-maker cannot make the design of his work intelligible, nor shew, in a little compass, the whole effect of the piece he is about to execute: "therefore," he insists, "perspective ought to be studied by every one who would excel in this branch of business, inasmuch as it is the very soul and basis of his art." Here perspective is strongly enforced, although it was very little known in the time of Chippendale; and to the ancients less known, for they performed their works merely by ocular observation of the objects themselves, which rendered their performances so very defective. Now there are some even in the present day, who have asserted that designs do not look so well when executed as in a drawing: this, however, is a mistaken notion, provided the drawing be correctly made and naturally coloured: but such persons are really ignorant of the first rudiments of delineation, and of the most familiar principles of visible beauty. Sketching ornaments must be practised before the young cabinet-maker commences geometrical figures with the compasses; because the hand will be stiffened, a freedom of which is very essential, to convey our ideas instantaneously of a design so soon as conceived in the mind, and while in the presence of the employer, or to sketch out an article of furniture we have just seen. There is a method practised by some artists, which I think a good one, namely, after their design is sketched out, to proportion it by a scale, and afterwards, with a quill-pen to put the same in ink, giving the drawing the appearance of being done with little trouble, and that in a very sketchy manner: by this means we can depend on the design having the same appearance and proportion in its execution as the drawing presents. All rustic and picturesque objects, although penciled in straight lines, should, nevertheless, be put in ink with a quill-pen, to give the drawing a crisped appearance. Mouldings should also be drawn entirely by the eye and hand, for it gives them a more graceful curvature; and all ornaments to embellish and fill up cabinet designs drawn perspectively, unquestionably depend on the accuracy of the eye and freedom of the hand alone, care being taken to observe the perspective inclinations of the different parts; for not unfrequently in bed-furniture, where the bed is drawn in perspective, errors of this kind are to be seen.

In large houses, rooms should always be fitted up in a certain style of archi-

tecture; that is, they should be wholly Grecian or Roman, Egyptian or Etruscan, Gothic or Moresque: and this should likewise be observed in the cabinet-furniture, upholstery, &c. so as not to present a heterogeneous mixture of dates and styles, but an accordance of ornament throughout: as an instance, Mr. Sheraton, in one of his designs, shewing part of a room with a sofa in it, erroneously calls it Egyptian, when in reality it is nothing but degraded Roman. This puts me in mind of the Roman hall at the Mansion House, commonly called the Egyptian Hall. I am also of opinion, that to introduce foliage for tails to griffins is truly ridiculous and inconsistent; and would therefore ask with Horace,

> "If in a picture you should see
> A handsome woman with a fish's tail,
> Or a man's head upon a horse's neck,
> Or limbs of beasts, of the most different kinds,
> Cover'd with feathers of all sorts of birds,
> Would you not laugh, and think the painter mad?"—Roscommon.

This brings to my recollection a Letter in the second volume of the World, where the writer descants upon the extravagance of his wife's taste in household furniture; the part which is most to our present purpose I shall here transcribe: "There is not a bed in my house (says he), a table, a chair, or even a grate, that is not twisted into various ridiculous and grotesque figures, and so decorated with the heads, beaks, wings, and claws of birds and beasts, that Milton's

> 'Gorgons, and hydras, and chimeras dire'

are not to be compared with them. In each room there is a pair of stands, supported by different carvings of men or monsters, on which are placed branches of china representing lions, bears, and other animals, holding in their mouths or paws, sprigs of bay, orange, or myrtle; among the leaves of which are fixed sockets for the reception of wax candles, which, by dispersing the light among the foliage, I own make a very agreeable appearance. But I can see no use for the lions or bears: to say the truth, I cannot help thinking it a little unnatural,

for it is well known, that all kinds of savage beast are afraid of fire. The chimney-pieces are also covered with immense quantities of china of various figures, among which are Talapons and Bonzes, with all the religious orders of the East.

" The upper apartments of the house are hung with Chinese and India paper where all the powers of fancy are exhausted in a thousand fantastic figures of birds, beasts, and fishes, which never had existence! And, what adds to the curiosity is, that the fishes are seen flying in the air, or perching upon the trees; which puts me in mind of a passage in Horace:

'Delphinum sylvis appingit.'"

But some persons imagine, if a piece of furniture is different from what has already been made, the article merits esteem, it matters not however absurd, in which there is perhaps no mark of convenience, propriety, or classification. Such do not consider, that furniture, when formed on a true taste, having an apt accord between the peculiar meaning of each imitative or significant detail, and the peculiar destination of the main object to which these accessories belonged, conduces much to our rational pleasure; and that articles only become, in consequence of injudicious appendages, weaker and more expensive, without becoming at all more beautiful: hence the outlines of our furniture fifty years ago were very insipid, the embellishments unmeaning, and, from their ill and flimsy shapes, the articles were of short duration.

Perhaps the following remarks may shew the chief causes why the Greeks produced such chaste objects of workmanship, with which mankind are so much enamoured, and with which this discourse shall close. Whatever might be the encouragement which private individuals bestowed on an artisan in compensation for his labours, it could not equal the advantage of public patronage: therefore, when communities, where the arts flourished, treated them not only as private excellences, but as public benefits, an artisan was impelled by the additional and powerful principle of love to his country to exert himself, that the honour of his native city and district might shine with augmented lustre. Not only was his merit secure of a due renown, but it was likewise certain of an adequate reward.

Nor were these the only motives which animated the masters of antiquity; but superior to all, was the persuasion that a kind of religious respect was paid to their deities, by exquisite skill in forming their symbols and representations. The desire of glory and fame, the honour of their country, and the principles of their religion, surmounted every difficulty. Not contented with equalling others, artists were prompted to excel whatever had been done before them; and thereby produced those works which now fill us with admiration.

GEOMETRICAL DEFINITIONS.

GEOMETRY is the science of constructing and developing on paper, or any plain surface, the real image of every superficial or solid figure: it is commonly divided into *Theoretical* and *Practical*. According to Herodotus, the Egyptians were the first inventors of this science, and that from necessity; for the annual inundations of the river Nile bearing away all the landmarks of men's estates, they were obliged to distinguish the boundary of their possessions by the geometrical consideration of their figure and quantity. It is called the doctrine of extension and magnitude; that is, of lines, surfaces, and solids. Astronomy, geography, navigation, fortification, perspective, mechanics, and, in a word, all the precise and accurate sciences, are alike dependent on it. We shall notice those parts of geometry alone which concern the workman, and without a practical knowledge of which no invention whatever can be clearly conveyed to the imagination of others.

Extension is an expanded surface, proceeding in any or every direction.

Magnitude is a solid bulk, having length, breadth, and thickness.

A Figure is any bounded space; and if formed of a plain surface, it is then called a plain figure.

A Superficies is a figure having length and breadth only.

A Solid Figure has three measures; namely, length, breadth, and thickness: hence surfaces are the extremities of solids, lines the confines of surfaces, and points the terminations of lines.

An Angle is the concentration or conjunction of two inclined lines.

Angles are at all times one of the three following; namely, right, acute, or obtuse.

A plain Surface is that in which any two points being taken, the right line between them lies wholly in that plane, or that every where agrees with a straight line passing through any two points on that surface.

A Quadrangle is a plain square figure bounded by four right lines.

A Parallelogram is an oblong quadrangle, the opposite sides of which are parallel.

A Quadrilateral is a quadrangle formed by four equal lines.

A Rhombus is a quadrangle, having its sides equal, and its angles two equally obtuse, and two equally acute.

A Rhomboid is an oblique-angled parallelogram, having its opposite sides and angles equal to one another.

A Trapezium is a figure with none of its sides parallel.

A Trapezoid hath only two of its opposite sides parallel.

All plain figures containing more than four sides are called *Polygons*, and have names according to their number of sides: these are explained in pages 3, 4.

A Circle is a plain figure formed by one uniform curved line, called its circumference, which curve is every where equidistant from the point called the centre.

A Semicircle is half of a circle.

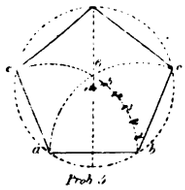
A Segment of a Circle is more or less than half of a circle.

The Diameter of a Circle is a straight line drawn through its centre, and terminated at both ends by the circumference. *A Semidiameter* is half of the diameter.

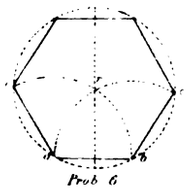
A Chord is a right line drawn within a circle, having its ends joining the extremities of the arch.

The Radius of a Circle is a right line drawn from the centre to the circumference.

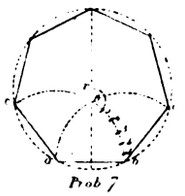
PLATE I.



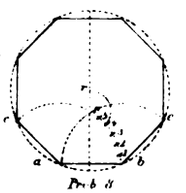
Prob. 5



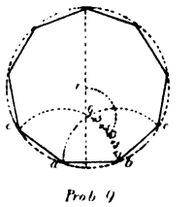
Prob. 6



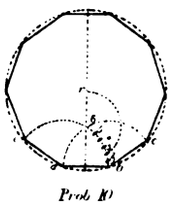
Prob. 7



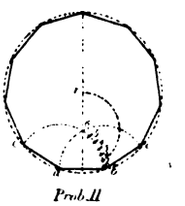
Prob. 8



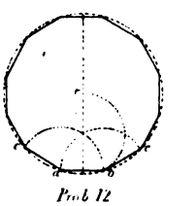
Prob. 9



Prob. 10



Prob. 11



Prob. 12

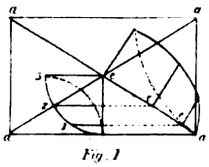


Fig. 1

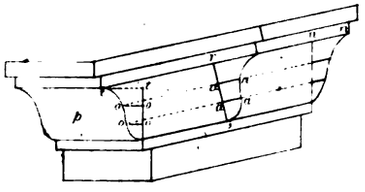


Fig. 2

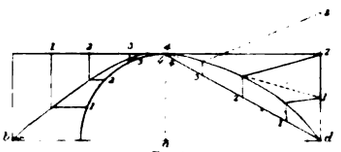


Fig. 3

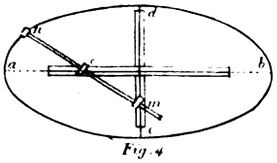


Fig. 4

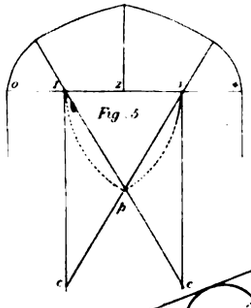


Fig. 5

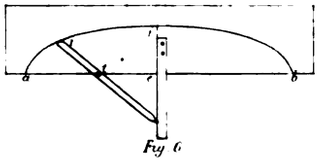


Fig. 6

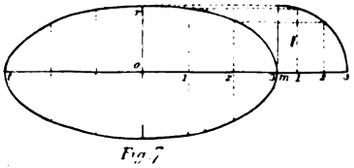


Fig. 7

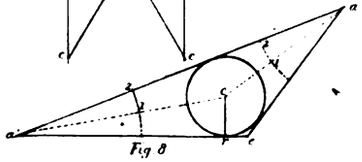


Fig. 8

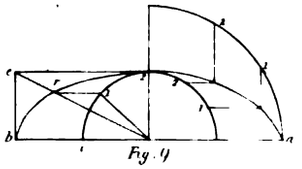


Fig. 9

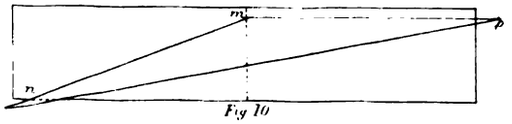


Fig. 10

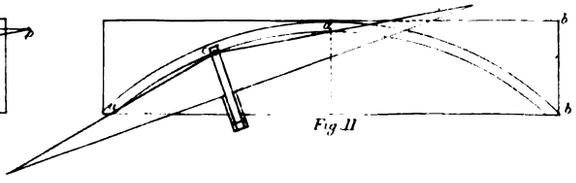


Fig. 11

Fig. 12

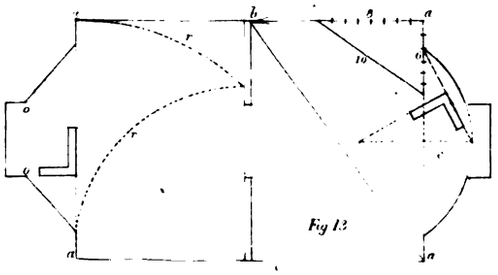


Fig. 13

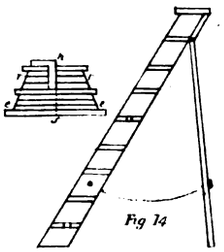


Fig. 14

RB del.

PROBLEMS IN PRACTICAL GEOMETRY.

PLATE I.

BEFORE the student enters on the rudiments of perspective, it is required that he should be thoroughly acquainted with the geometrical formation of different figures, to be enabled to lay down the original plan, or such parts of the furniture as may be requisite previous to their perspective delineation: for this purpose, the annexed plate contains not only a sufficiency of practical geometry, but the most facile methods of construction, and such problems and figures as are of general use in practice.

Problem V. *To describe a pentangular object from a given side.* Admit *a b* the side given: place one foot of the compasses on *b*, and describe the curve *a c*, then the curve *b c*; produce a perpendicular through the intersection, and divide one arch into six equal divisions; next set the compasses on 6, and turn one division down to *r*; then place the compasses on *r*, and revolve the circumscribing circle: this circle will contain the number of proportional sides required.

Problem VI. *To describe, from a given side, an hexangular table-top.* Admit *a b* to be the side given: place one foot of the compasses on *b*, and describe the curve *a c*, then the curve *b c*; on the point *r* revolve round the circumscribing circle, which will contain the equal sides requested.

Problem VII. *To describe an heptangular object from a given side.* Admit *a b* the side given: with one foot of the compasses on *b* describe the curve *a c*, then the curve *b c*; produce a perpendicular through the intersection, and divide one arch into six equal divisions; next set the compasses on 6, and turn up one division to *r*; then set the compasses on *r*, and revolve round the circumscribing circle: this circle will then contain the proportional number of sides sought.

Problem VIII. *To describe an octangular figure, one side being given.* Let *a b* be the given side, take the compasses, set one foot on *b*, and with the radius

b a describe the curve *a c*, remove the compasses to *a*, and next describe the curve *b c;* divide one side of the arch into six equal parts; then set the compasses on 6, and with the distance division 4, describe up a curve to the vertical line *r;* lastly on *r*, set the compasses and extend them to *b*, from which revolve a circle, and the same will contain the number of sides sought for.

Problem IX. is a *nonagon*, X. a *decagon*, XI. an *undecagon*, and XII. a *duodecagon:* these are all formed upon the same principle of the last-described figure, only observing to turn up in each an additional part.

Fig. 1. *shews how to find the angle ribs of a convex or concave canopy of a bed, or a veranda, or any arcuation whatever.* Let *a, a, a, a* be the plan of the bed: through this draw the diagonal lines, and form the given arch 1 2 3; produce these divisions to *e e e*, and afterwards raise them perpendicular to the diagonal; next take the height of the ordinates 1 2 3, and transfer them to the line *e e e:* this will form the angle rib demanded.

Fig. 2. *shews how to find the forms of raking mouldings in the pediments of book-cases.* Let *p* be the given horizontal moulding, and *r* the rake of the pediment: draw *r s* any where at right angles to the slope, and mark divisions on the original moulding, which divisions draw parallel to the rake; take the ordinates *o o*, &c. and set them to *a a*, &c.: which will produce the form of the raking moulding. For the moulding in the open part of the pediment, take the raking measure *t t* and set it to *n n*, this will then give the return moulding.

Fig. 3. *shews how to describe the parabolic and hyperbolic curves adapted to bed-cornices.* Suppose *a* 4 *b* extremities of the hyperbola: then on *a* as a centre, and with 4 as a radius, describe the arch 1 2 3 4; next divide the upper line into four parts, which divisions produce perpendicularly, and the others on the arch draw horizontally; their intersections will then give the hyperbolic curve. For the parabolic, draw the divisions on the line *d* 3 towards *b*, and their mutual intersections with the three perpendicular lines emanating from the chord will likewise give the parabolic curve.

Fig. 4. *How to set a trammel to generate an ellipse or oval at a given length and breadth.* If *a b* be the length, and *c d* the breadth, then fix the cross exactly on the two diameters; set the nut *e n* equal to half the breadth, and *n m* set half

the length: thus may the oval be described by the revolution of the nuts along the cross.

Fig. 5. *How to find the centres for describing a Saxon pointed arch.* Let *o* 4 be the width of the arch, which arch divide into four divisions; set the compasses on 1, and revolve round 3 to *p*, and on 3 revolve round 1; now, if two lines be drawn through 3 *p* and 1 *p*, then 1, 3 and *c*, *c* will be the required centres for drawing the arch.

Fig. 6. *shews how to describe a semi-ellipsis with two slips of wood.* If *a b* be the length, and *e i* the required breadth, then nail down a slip on the centre *e*; get another slip half the length of the semi-oval; fix a pencil perpendicularly at the end *r*, and run a brad-awl through the dot *t*, which dot is from the pencil equal to the height: if the slip be now moved along the edge of the board, it will generate half the curve as above stated. Observe the same process for the other half of the oval.

Fig. 7. *To describe an ellipsis by ordinates.* Let *t* 3 be the length, and *o r* half the breadth: on *m* describe a quadrant equal to half the height; divide the base into three equal parts, and half the length into the same number; if lines be now produced from these divisions to intersect each other, then a quarter of the ellipsis will be generated: the remainder of the curve is set off from this quarter.

Fig. 8. *To describe a circle within a triangle.* Let *a e a* be the given triangle: set the compasses on *a*, and describe a curve at any convenient distance; this curve divide into two divisions, and produce a line through the divided curve: now where the lines intersect, as at *c*, will be the centre of the circle, and *c r*, if drawn perpendicular, its radius.

Fig. 9. *How to describe a semi-ellipsis by intersections of lines.* Let *b a* be the length, and *b e* the height of the ellipsis: set the compasses on the centre, and describe the two arcs 1, 2 and *a* 2; if the two perpendicular and horizontal lines be now drawn, their mutual intersections will give the curve required. Where one point in the curve may be sufficient, divide the inner arc into two divisions, and intersect it with *r* on the diagonal of the oblong, which will be a point in the curve.

Fig. 10. *shews the method of making a triangular board for describing a very flat segmental arch.* Find the centre *m*, and draw an inclined line to *n*; then drawing a line from *n* to *p* will produce the required triangle.

Fig. 11. *shews the application to describe a segmental arch by means of the above flat triangular board.* If *a*, *b*, *b* be a board on which the segment of a circle is to be described, place two brad-awls at *a a*, and a pencil in the slider *c*; then by moving up the triangle against the brad-awls, its passage will describe half the required segment. A number of concentric curves, as is sometimes necessary, particularly in the stall-board of a shop-front, may be described by driving out the slider.

DEFINITIONS OF PERSPECTIVE TERMS.

PERSPECTIVE is the science by which the resemblance of objects, as seen from a single point of view, is represented and proportioned on a definite plain surface; which plane is supposed to intercept and cut the visual beams of light which proceed from the angles of the objects to the eye of the spectator, who is considered as standing at some remote distance from that plane. This is concisely the great outline of the theory of perspective, which may be better understood by holding up at arm's length a picture-frame, containing a square of glass washed over with white hard varnish, and, when dry, marking on it with a pencil the visible lineaments, or outline appearance, of the objects as seen within the compass of the frame; which result will be the lineal picture, the glass being considered the paper on which the objects are to be painted. To produce this deceptive coincidence on an opaque surface, from a given object and point of view, and a given distance and position of the paper, situated between the object and the spectator, constitutes what is properly called the practical part. According to Vitruvius, perspective was invented by the Greeks, and owes its origin to scene-painting: however, it has since been variously applied and much cultivated, so that it is now considered as a polite art, comprehensible even by the unlearned, useful to the scholar, ornamental to the accomplished gentleman, and indisputably necessary to the artisan.

If *rays of light* are supposed to proceed from an object to the eye of the spectator, and are intercepted or cut by a plane, the common section thereon depicted is called the scenographic or perspective representation of that object: if any part of an object touch the transparent plane, the part thus in contact will be the perspective representation of it.

The Plane of the Picture, means the paper or canvass on which the representation of an object is to be drawn.

The Half-Picture is such when the eye is stationed nearly opposite the edge of the picture, and the object viewed obliquely, instead of the eye being turned directly towards it: such are drawings of furniture in general.

Visual Rays are imaginary lines proceeding from the different angles of the object direct to the eye of the spectator.

The Primitive Object is the figure given to draw from.

Primitive Measures are the real measures of the object reduced to a scale, which, by being thrown obliquely into perspective, will be seen foreshortened.

The Base Plane is the floor on which the object is supposed to be situated.

The Base Line, or entering line, is the line on which the transparent plane is supposed to be posited.

The Horizontal Line is the visible termination of a level plane with the sky: in perspective, it is a line passing before, and of the exact height of, the eye of the spectator, whether he be elevated or standing on a floor.

The Point of View is the optic angle of the visual rays, and where the spectator is supposed to stand while drawing the picture; consequently this point is always out of the picture: from this distance and point only will the picture, when viewed, appear natural.

The Seat of the Eye, by the old, and some modern writers, erroneously called the point of sight, is a point in the picture directly opposite the eye, and is produced by a line drawn at right angles to the picture. This point becomes a vanishing point for all lines situated at right angles to the base line.

Vanishing Points, by the old writers termed accidental points, because they knew no art or rule for finding them, are points in the horizontal line, to which lines or planes situated obliquely to the base line would truly concentrate or meet.

The Inclined Vanishing Point is a point ascertained by a perpendicular line raised from the extreme vanishing point on the horizontal line: it is required for pediments and swing glasses.

The Diagonal Vanishing Point is a point set off upon the horizontal line either

way from the seat of the eye, and in the same proportionate measure as the draughtsman is supposed to stand distant from the picture. The old writers erroneously called it the point of distance.

The Proportionate Vanishing Point is half or any other quantity set off on the horizontal line, and half or any proportionate measure of the object set off on the base line.

PRELIMINARY OBSERVATIONS ON PERSPECTIVE DRAWING.

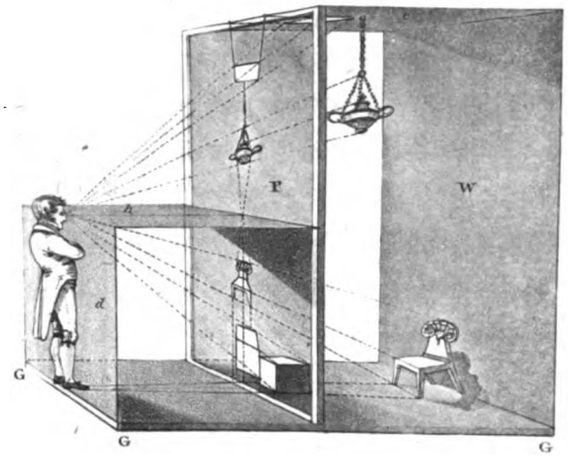
PLATE II.

If the rays of light which flow from a luminous body (such as the sun) fall on any object, those rays are again reflected from that object every way in straight line directions; and if any of those reflected rays encounter the eye of a spectator, they are, by the fluids of the eye, made to converge on the retina, and excite a sensation which is called the appearance of that object. If the rays proceeding from an enlightened object to the eye are intercepted by a transparent plane, the section of the rays cut by that plane will form thereon what is called the perspective representation of that object.

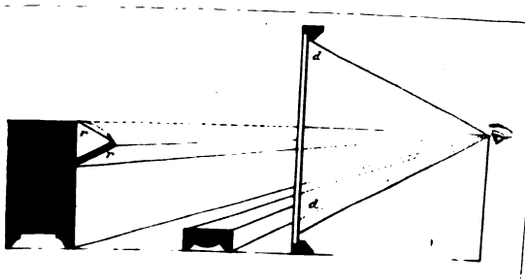
In perspective, the great art is to find geometrically on the vertical transparent plane, which is supposed to be situated between the object and the observer, the exact place where a ray proceeding from any angle of the object to the eye would pierce, or appear to pierce, through that plane. This point, let it be remembered, is at all times in a direct line from the object to the eye. If two points are thereon found, which in most cases can only be obtained by the intersection of two lines, then a line may be produced to those points; if more are obtained, then planes may be formed, and from thence solid figures. Therefore, practical perspective is nothing more nor less than a knowledge of finding the visual points of the objects upon the opaque surface on which we are drawing, which surface may not only be plane, but cylindrical or domical.

A picture may likewise be drawn on an inclined surface, or a horizontal one; but in a work wholly on furniture, I shall confine myself to the vertical or upright picture, the erect position being by far the most general and useful; and because

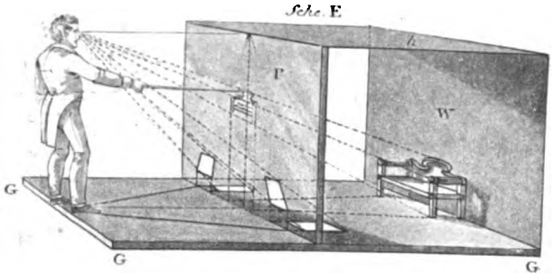
PLATE 2.



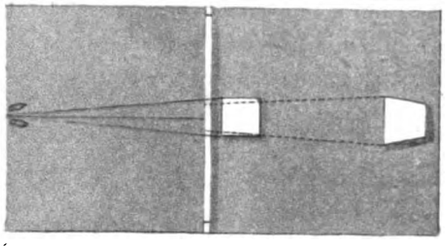
Diag. A

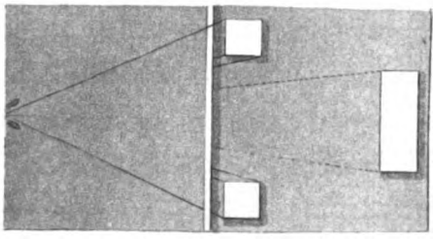


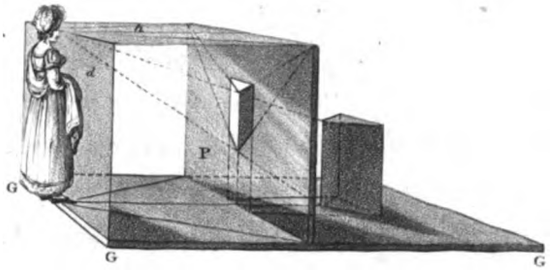
Sche. E



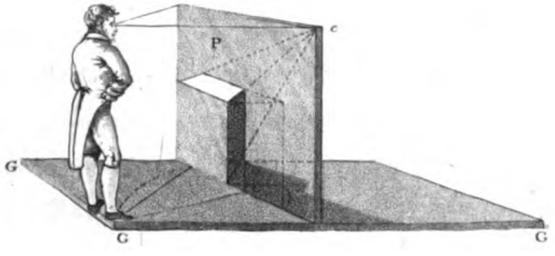
Diag B



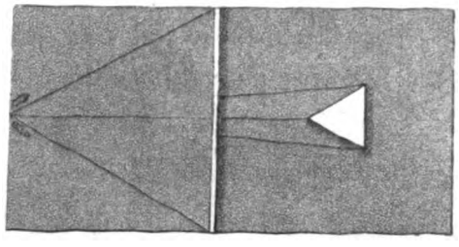


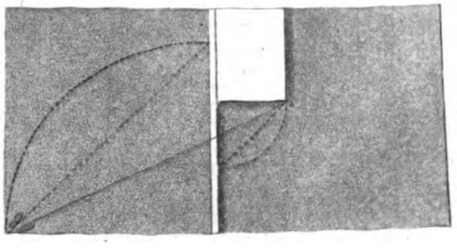


Diag C



Diag. D





PB del.

nature has disposed the greatest number of objects in erect postures, and gravity draws all bodies downwards in a direct perpendicular to the centre of the earth, imposing an erect position on every object that is to stand firm on its base: objects likewise, in erect positions, will have many of their parts parallel to an erect picture, and the perspective representation of such parts will be similar in shape to the parts they represent. These will assist us in forming a just idea of those parts of the original object, which otherwise, by reason of their obliquity to the picture, have their representations very unlike their real forms and proportions.

If on an upright plane two horizontal points of a cube, situated obliquely to and beyond the said plane, be depicted, and a line be drawn through those two representative points, the line so drawn will evidently fall in with the horizontal plane; and all lines parallel to that original line will concentrate in the same point, because all horizontal lines parallel to each other meet in one and the same common vanishing point. To find the situation of this point on the horizon without the visual ray, is another essential part of perspective: to perform it, two things are always required to be known; namely, the position of the object to the plane of the picture, and the distance of the observer from that plane. When these are determined, the point is very readily found, by merely producing a line parallel to the object, direct from the eye of the observer to the line of the horizon, which horizontal line is traced through the plane of the picture. Now, as perspective is worked by lines, and supposed planes coming in contact with the picture, it will perhaps be clearer to the conception of the young cabinet-maker f we illustrate the same by schemes and diagrams.

Diagram A represents a person contemplating with some astonishment the extraordinary appearance of a cube and chair seen in a direct point of view, and situated on a level floor, yet appearing to his eye to stand one on the other: this is evident by their scenographic representation on the plane of the picture. If a panel be formed in the ceiling, or a lamp suspended therefrom, they will evidently have the same appearance: this is clearly to be seen by the rays proceeding from the objects to the eye of the beholder. Hence arises this self-evident conclusion, that all objects situated on a level floor, as they recede from the spectator advance up or ascend the picture. G G G show the floor plane, P the

picture-frame, *h* the horizontal plane, *d* the directing plane, *c* the ceiling, and W the wall or end of the room: below is given the plan of the scheme.

Diagram B shows a person studying two squares, and a hall-seat placed rectangularly on a level floor, the station being centrical. As observed in the figure just explained, the distant seat ascends the picture, but not over the squares, as in the example of the cube and chair; for here the distant seat comes between the hither squares, and vanishes into the horizon and centre of the room. That objects do actually appear to ascend the picture if situated below the eye, we may illustrate in the following manner: Suppose you want to mark on the transparent plane the bearing of a cube near it, you must undoubtedly lower your hand; if to mark one further back, you must then raise your hand; if a third were placed more remote, you must then raise your hand still higher; and if one were situated five miles off, to point at it would then be to raise your hand to the horizon, or height of the eye. G G G represent the floor plane, P the plane of delineation, *h* the horizontal plane, and W the wall at the end of the room: below is shown the plan.

Diagram C shews a female artist viewing the image of a prism, and its vanishing points seen in a direct position; which prism is supposed to be delineated or drawn on the transparent plane interposed between the object and the beholder. Here two vanishing points are seen, to which the sides of the prism converge or meet in the horizontal plane: how these vanishing points are obtained may be seen by the plan of the ground plane, seat of the object, place of the picture, and station point of the observer below. To find any vanishing point, as before observed, a line must always be drawn from the station of the beholder parallel to the side of the object to be represented; then, where it cuts or comes in contact with the line of the picture if carried up to the horizon will be its vanishing point. G G G represent the floor, P the plane of delineation, *h* the horizontal plane, and *d* the directing plane.

Diagram D shews a person viewing a parallelopiped, in the position in which furniture is usually represented. As a picture it may appear very absurd, it being evident that the person is not looking direct at the parallelopiped, but at some other object in the direction of the line *c*. That this is the best method of repre-

senting furniture, to render it practically intelligible to the cabinet-workman, will readily be admitted: but this disposition as a whole picture is extremely improper, because no person would stand to view the parallelopiped and look at the point *c*; for in that case the person must look obliquely, and the parallelopiped would then make only part of the view, it not being the only object at which the spectator would be looking: therefore, it is no more than half a picture, the other half of which is not seen. But it is to be remembered, that the rules of perspective are not violated in this position, but the principles by which they are applied are injudicious, occasioned by the improper disposition of the centre, which falls on the right-hand edge of the picture. Lastly, if a person were to make a drawing of a single object, he would undoubtedly turn his head direct to that object, and not look athwart it, as he now does: by that means, it is evident the object would fall into oblique perspective, for the centre would come in the centre of the object, and the plane for delineation would be constructed at right angles to that centre line; consequently both sides would incline to the horizon. G G G represent the floor plane on which the object is situated, and P a plane of glass gummed over, on which the object is delineated: below is shown the plan of the above diagram.

Scheme E represents the end of an escritoir-desk standing on a floor, the end of a foot-stool, and the eye of a person looking at these objects; likewise the edge of the plane of delineation, and method of obtaining vanishing points for the flap when shown partly turned down. The method of finding the vanishing points for an object inclined to the plane of delineation has already been defined in diagram C. If the edge of the escritoir, for instance, be here supposed to represent the plan of an object on the floor, and *d d* the ground line for the picture plane, then the process for finding the vanishing points for inclined objects will be seen to be no other than the method already described for finding vanishing points of objects oblique to the picture.

PROBLEMS IN PRACTICAL PERSPECTIVE.

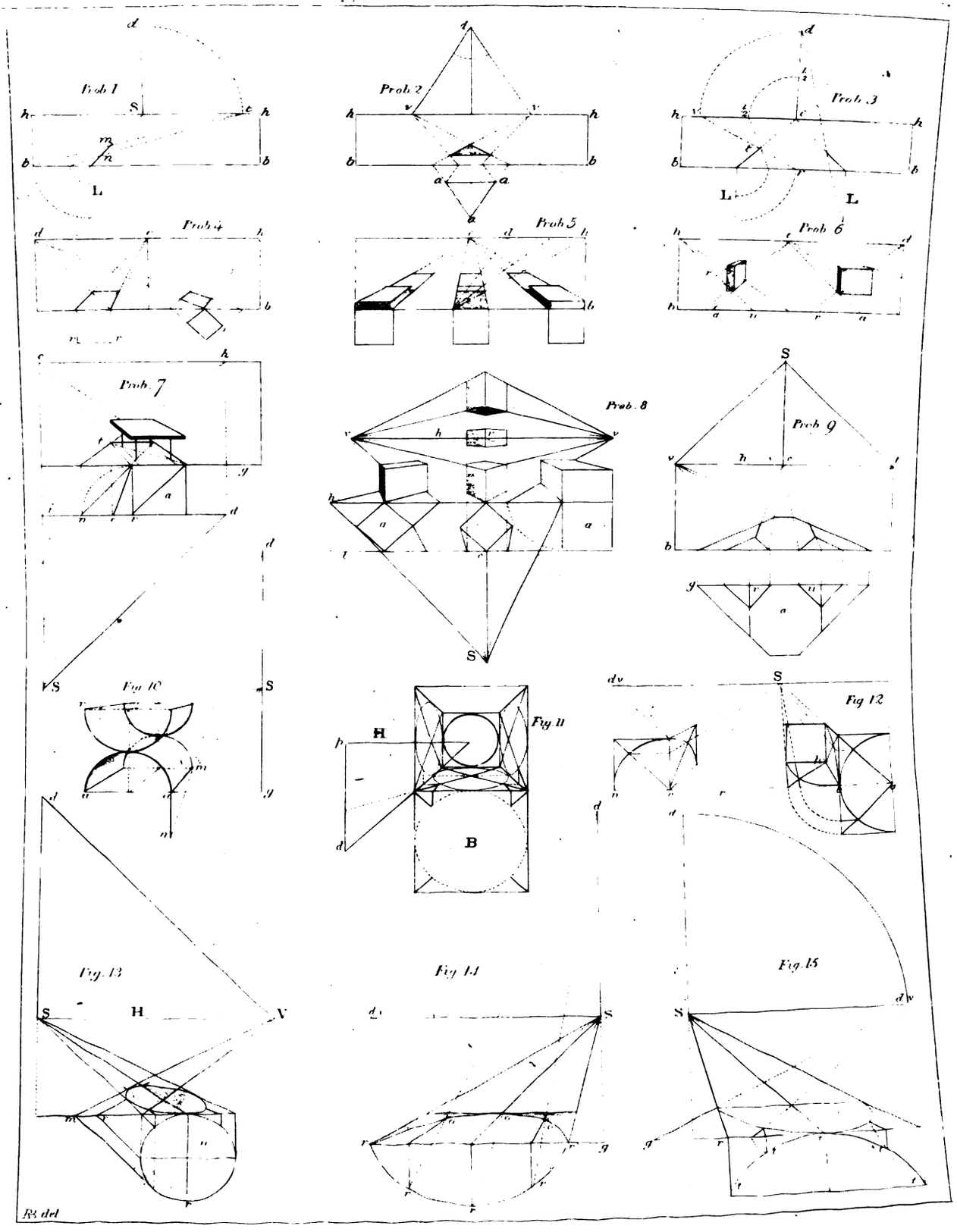
PLATE III.

PROBLEM I. *Rudiments of perspectively delineating a line situated at right angles to the base line, and also of finding the representation of two given points on that line.* *b b* represent the base line, and L the original situation of the line required to be projected: draw the horizontal line *h h* parallel to the base line, and determine thereon the seat of the eye S; from this point erect a perpendicular at right angles to the line *h h*, and on the perpendicular set the distance the spectator is supposed to stand from the plane of delineation, as *d*; next set the compasses on S, and describe the quadrant *t*; then revolve the original measures to the base line, and from thence produce them to the point *t*; then will *m n* be the line and points required.

Problem II. *How to delineate the scenographic representation of a triangle, one of its sides being situated parallel to the base line, but not in contact.* *a a a* show the original triangle, *b b* represent the base line, *h h* the horizontal line, *c* the centre of the picture, and *d c* the known distance the spectator stands from the plane of delineation. To find the vanishing points for the sides of the triangle, produce the lines *d v*, *d v* parallel to the lines *a a*, *a a*: if the sides of the triangle be now extended to the base line *b b*, and from thence drawn to their respective vanishing points *v v*, the object will be completed.

Problem III. *shews how to represent, by three different methods, two lines in perspective, whose originals are situated at right angles to the base line, and likewise in contact.* *b b* show the base line, *h h* the horizon, *c* the centre of the picture, *d* the representation of the point of distance, and L, L the geometrical situation of the original lines: for the operation, set the compasses on *c*, and

PLATE 3.


Prob 1
Prob 2
Prob 3
Prob 4
Prob 5
Prob 6
Prob 7
Prob 8
Prob 9
Fig 10
Fig 11
Fig 12
Fig 13
Fig 14
Fig 15
L
S
H
B
V

carry round *d* to *v*; then revolve L to *r*, which produce to *v* and *c*; then will L *c* be the perspective direction of the line, and *t* its length. If half the distance be used, or a line drawn up from L to *d*, it will produce the same point. It is to be remembered, that the line *c d* is supposed to be brought up perpendicular to the plane *h h*, *b b*, and the eye placed at *d*, where the object assumes a natural appearance.

Problem IV. *Given the base line* b, *and the horizontal line* h, *with the centre* c, *and point of distance* h d; *likewise the original situation and inclination of two plain squares to that base line, from thence to find their perspective representation.* *r r* being situated at right angles to the base line, has its vanishing point in the centre *c*; and the square being equal, has its diagonal converging to the point of distance *d*, thereby terminating its length. The square marked *t* being posited in an angle of 45 degrees to the base line, consequently vanishes to the point of distance *d* and *h*.

Problem V. *represents two quarto books in perspective, supposed to be lying on a table.* Here is shown, by a short distance, as *d*, the ill effect that would thereby be produced (called an anamorphosis); not that the perspective is false if the eye be placed in the true point from whence the representation was worked, but that it would strain the eye to view it from so near a distance: hence perspective has frequently been condemned through distorted representations given in books, occasioned entirely by bringing the vanishing points on the plates; but if the student were to draw the examples off, and use a greater distance, their beauty and excellence would then be apparent.

Problem VI. *Given the base line* b, *and horizontal line* h d, *with the centre* c, *and points of distance* h d; *also the known distance of two erect squares from the said ground line, from thence to delineate their perspective representation.* *a* being a point in the direct line of one of the objects, which line is also at right angles to the ground line, consequently draws to the central vanishing point; *a n* being the original distance of the object from the ground line, consequently draws to the point of distance *h*; the height is set on the line *a r*, and from thence drawn to the centre *c*: the other object is self-evident.

Problem VII. *shews how to draw the parallel perspective representation of a*

square table, either by the point of distance, or by visual rays from a plan. Let *a* be the plan, *d* the line on which the picture is to rest, and S the station point: draw the ground line *g*, and horizontal line *h;* and for the diagonal point, circle round the distance *i* S to *d*, then carry it up to the horizon *h;* next bring round *r n*, which produce to the line *g*, and from thence draw it to *h*, and the lines from the plan *a* draw to *c;* then where they intersect, as at *t*, will be the length of the seat. The visual ray *e*, tending to the station point S, which is carried up to *t*, proves the mutual agreement of the lines. The whole method of drawing household furniture is dependent on the knowledge of this problem: it cannot, therefore, be too much studied.

Problem VIII. *Given the seats and inclinations of three cubes, likewise the horizon and point of distance, from these data to draw their perspective representations.* Let *a, a* be the seats, *b* the base line, *h* the horizon, *l* the line of projection, and S the place of the observer: for the operation, take the distance S *c* and set it on each side of *r*, as *v v;* then, if the sides of the diagonal objects be produced to *v v*, and the parallel object to *r*, the intersection of the vanishing lines and visual rays will complete the representation.

Problem IX. *Given the seat of an octangular plane surface, the base line of the picture, the horizontal line, the seat of the eye, and distance of the observer from that object, from thence to draw its scenographic representation.* Let *a* be the seat of the octagon, *b* the base line, *h* the horizon, *c* the seat of the eye, and S the place of the observer: draw the line S *v* parallel to the side of the object *r*, and S *t* draw parallel to the side *n;* then, if the sides of the object are produced to the line *g*, from thence to *b*, and from that to *v t*, their concurrent intersections will form the object required.

Fig. 10. *How to draw an object similar to a window-seat.* Let *g* be the floor line, S the seat of the eye, and S to *d* the measured distance the draughtsman is supposed to stand from S, that is perpendicular to the surface of the plate: describe the two curves *a a, r r* with the compasses, this will give the front of the seat; for the back part, which is a similar figure, set the width from *a* to *n*, and *n* produce to the distance *d*, then will *m* be the width of the seat; the curves of which are also described with the compasses from their respective centres.

Fig. 11. shews if a square box be represented in parallel perspective, whose original has a circle on its bottom, as the plan B, and one on each side, then the perspective representation of the circle on the bottom, and the two on the sides, will be perfect ellipses: but the one on the end will remain a circle, although the direct visual ray does not pass through its centre; because all figures parallel to the plane of delineation depicted thereon are similar figures: this may be proved by the section of an oblique cone: H is the horizon, *p* the point of distance laid on it, and *d* the same distance turned downwards, which becomes a vanishing point for the bottom.

Fig. 12. *shews how to find the perspective curve as generated by a lid or door when turned on its hinges.* Suppose *a b* to represent the end of a box situated parallel to the plane of delineation, and *a* the centre of the hinge: then it is evident, that the lid or door so situated will describe a quadrant, as will the end *n, o;* but if *n, o* represent the back edge of the door, and *n, o* the hinges, then it will generate the elliptic curve, and the door will incline to the horizon: if the hinge is at *h,* then it will likewise describe an ellipsis, but in that case the door will incline to the ground line.

Fig. 13. *How to form the perspective representation of a circle lying in a horizontal position below the eye.* Let *m* be the ground line, H the horizon, S the seat of the eye, *d* the point of distance, and *n* the circle situated in contact with the ground line: draw two diameters through the circle, and divide three of the quarters into two equal parts each; those parts produce to the ground line, and from thence to the point S; next draw the line *r r,* and produce *d v* parallel to it, which will give the operative point required: the remainder is plain to inspection.

Fig. 14. *How to delineate a scenographic plan of a concave piece of furniture, the original figure being given.* Let *r r r r r* be the original plan, *g* the floor line, S the seat of the eye on the horizon, *d* the point of distance, and *d v* the diagonal vanishing point: produce the lines *r r,* &c. from the plan to the floor line *g,* and from thence to the vanishing point S: if the lines *r r,* &c. be now radiated to the point *d,* then their intersections *o o o* will be points through which to trace the perspective curve.

Fig. 15. *How to delineate a perspective plan of a convex piece of furniture, the*

original figure being either given or known. Let *t t t t t* be the original plan, *g* the floor line, S the horizon, *d* the point of distance, and *d v* the diagonal vanishing point: here produce the lines *t t*, &c. to the ground line *g*, and from thence to the vanishing point S; next circle round the line *r t g*, &c. to the ground line, and from that draw them to the diagonal vanishing point *d v*; then their mutual intersections will be points through which to trace the curve, which curve, observe, must be traced by hand. To conceive the above operation clearly, the original plan must be turned underneath the perspective one.

PLATE 4.

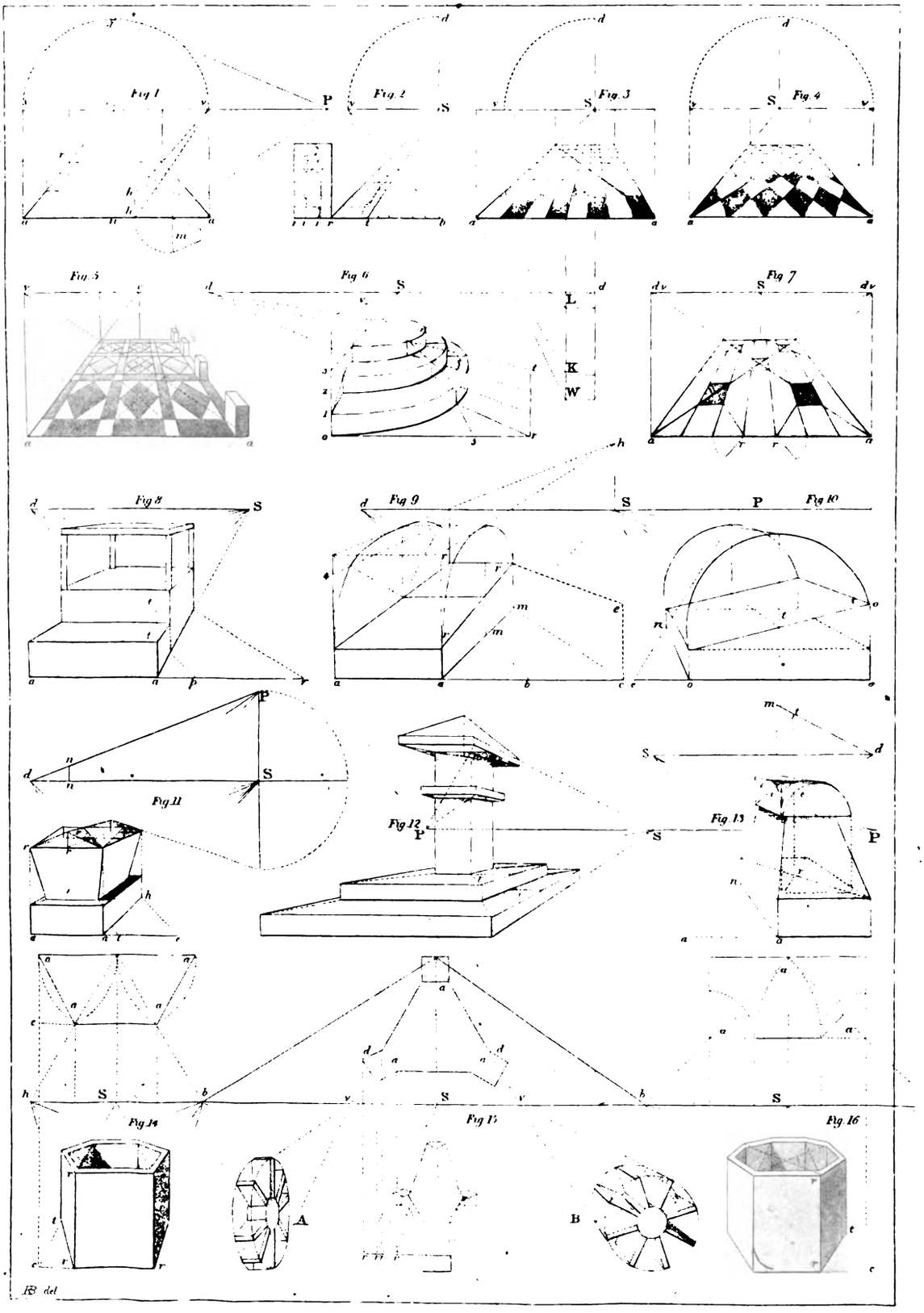


Fig 1
Fig 2
Fig 3
Fig 4
Fig 5
Fig 6
Fig 7
Fig 8
Fig 9
Fig 10
Fig 11
Fig 12
Fig 13
Fig 14
Fig 15
Fig 16
P
S
L
K
W
A
B

EXAMPLES IN PRACTICAL PERSPECTIVE.

PLATE IV.

FIG. 1. *The elements of delineating the perspective representation of the seats of chairs as arranged in a room.* Suppose *a a* the hither end of the room, *c* the seat of the eye on the horizon, *d* the point of distance, and *v v* the vanishing points for the diagonals of the room: set the depth of the room on the left hand from *a* to *n*, which draw to *v*, then will *r* be the remote end: for the chairs, first form the seat, as *m*, then from *d* draw the vanishing lines *d* P, *d* P parallel to each side of the chair; this will produce points to which the sides converge: for the height, set it on the lines *h h*, which draw to *v*; and for the equal divisions, set them from *a* to *n*, which produce to *v*; this will then give their perspective positions.

Fig. 2. *represents the image of a lady seen direct on a vertical looking-glass, and the same figure foreshortened, as seen on an inclined or swing glass.* First delineate the figure on the upright glass, which glass afterwards divide into squares, as *r r r r*; these divisions next set from *r* to *t*, which draw to the seat of the eye S: lastly, take the horizontal divisions, and set them from *t* to *b*; these produce to the diagonal point *v*, which is brought down from *d*, and where they cut the inclined line will be points from which to produce them horizontally: now within those reticulations the figure is to be formed.

Fig. 3. *How to draw an entrance hall floor divided into squares.* First assume the point S for the seat of the eye (a good proportion will be about one third the width of the picture); next divide the entering line *a a* into the number of squares intended, which produce to the point S; and for their depth in the picture, draw the diagonal line *a v*, as revolved from *d*. W shews a station the width of the

picture, K is one of 60 degrees, and L one of half the width of the picture: these are the best chosen points of distance.

Fig. 4. *How to draw the pavement of a cemetery divided into diagonal squares.* Here the seat of the eye is in the centre of the supposed vault, as at S; *d* is the point of distance, and *v v* the vanishing points for the diagonals, which diagonals are obtained by revolving round the distance *d:* next divide the entering line *a a*, as before mentioned in fig. 3.; these divisions produce to the two diagonal vanishing points, and the pavement will be completed.

Fig. 5. *How to draw the pavement of a corridor perspectively divided into squares, and subdivided into parallelograms and diagonal figures.* Set out the squares and parallelograms along the entering line *a a;* these draw up to the seat of the eye *c;* next lay the distance that the supposed observer stands from the pavement along the horizon from *c* to *v;* then will *v* be the vanishing point for a line passing through the diagonal of the squares, which is plain to inspection; lastly, where the diagonal line cuts the parallelograms in its passage to *v*, will be points by which the whole of the pavement is formed.

Fig. 6. *How to draw perspectively a flight of conical steps.* First draw the horizontal and ground lines, next assume the seat of the eye on the horizon, as S; and for the points of distance or diagonal points lay down *d d* equally on each side of the seat of the eye: let V be the vertex of the cone of the steps, and *r d* a line in the plane of the diagonal; on the line *r t* set the divisions of the risers, and produce them to *d;* next divide the ground line *o r* into seven divisions, and draw number 5 to S, then 1 2 3 to S, and where the lines 1 2 3 cut the conic line 1 V will be the tops of the risers: the other side draws to the point *d*, seen on the left hand.

Fig. 7. *How to draw the floor of a saloon perspectively divided into squares, and subdivided into octagons.* Lay out two sides of the octagon, as *r r;* suppose a third side to touch the floor line *a a*, and the others being at the same time situated in an angle of 45 degrees with the line *a a*, this will consequently draw to the diagonal vanishing points *d v*, *d v:* the squares are next produced to the seat or vanishing point of the eye S; and wherever the lines in their passage to the seat of the eye cut the diagonal lines, they will produce points for the squares.—

It is to be observed, that in most of these problems the distance used is infinitely too short: this is done to introduce a greater number in the plate.

Fig. 8. *shews the method of drawing the perspective representation of a flower-stand.* First draw the orthographical appearance of the riser of the hither step *a a t*, then assume the point S for the seat of the eye at any discretional distance, and on the left of the object lay down the distance from S to *d:* the working points being now prepared, set off the width of the step from *a* to *p*, next the original measure *p r*, these draw to the vanishing point *d*, and from their intersection on the line *a* S produce them perpendicularly; lastly, set up the height *a t t*, which draw to S; then where the lines cut will be the width of the steps.

Fig. 9. *shews the method of representing perspectively a portable writing-desk as laid open, with its thinnest end towards the spectator.* *a a* is the end of the desk, S the seat of the eye, and *d* the point of distance. For the side of the desk, draw the line *a* S, and set *a b c* for its original length, which produce to *d*, then will *m m* be the perspective measure: for the height, set up the real dimensions on the line *c e*, this draw to *d*, and from the points *r r* draw the line *r h*, then will *h* be the point of inclination: lastly, for the elliptic curves as described by the revolution of the internal flaps, take the length at *t t* from fig. 10. and set it on the line *r r*, which produce to *h*; this will give the height of the curve required.

Fig. 10. *shews the method of representing perspectively a portable writing-desk as laid open, and its side turned towards the spectator.* *o o o* represent the geometrical side of the desk, S the seat of the eye, and *p* half the point of distance. To obtain the perspective length of the end, set half the real measure along the entering line *o e* from *o* to *e*; then produce *e* to *p*, and *o* to S; and where they intersect, as at *n*, will be the depth of the desk: lastly, for the semicircular curves as generated by the revolution of the flaps, first find the middle of the slope *t t*, then on *t* as a centre and *o* as a radius describe the curve required.

Fig. 11. *How to draw perspectively a sarcophagus wine-cooler.* *a a* is the real proportion of the end, S the seat of the eye, and *d* the point of distance laid on the horizontal line: produce the line *a* to S, and *e* the measure of the side, produce to *d*, then will *h* be the required depth: the base is formed by drawing the diagonals from the corners to S and *d*, and bringing up the line *t:* for the

pediments, take the original triangle *r r r* of the sarcophagus, and form the same at *d* as *d n n*; then produce the line *d n*, and where it cuts, as at *p*, will be one vanishing point for the pediment: the other is found by merely turning the same downwards from S to *g*: the remainder needs no explanation.

Fig. 12. *How to draw a pedestal having steps at its base.* *r r* are the real measures of the steps, S the seat of the eye, and *p* the representation of the point of distance: produce the line of the steps forward from the point S through *r r*; then from *p*, seen on the left, bring forward the diagonals, and where they cut the lines of the steps, return them horizontally along the front: the point P, seen on the right, will, by the diagonals, determine the length for returning the steps on the other side. To get the pyramidal top, set off the real projection on the horizontal line *n*; this produce upward from S, and where it cuts the diagonal will then be its hither angle, by which process the object may be completed.

Fig. 13. *shews how to draw perspectively a night-cupboard.* *a a* represent the real measures of the side, which draw to the representative point of distance *d*, and seat of the eye S, and where they come in contact, as at *n*, will determine the depth: for the inclination of the pyramidal frustum, draw the imaginary diagonals, and at *r* erect a perpendicular line; now on *a m* set up the real height, which draw to *d*, then will *t* be the pyramidal point to which the sides converge: for the circular top, carry round perspectively a line from the diagonal *e* to *c*, this will give the side curve.

Fig. 14. *How to draw an hexangular tea-caddy in perspective.* *a a, a a* represent the plan, S the seat of the eye, and *h b* the vanishing points, which points are obtained by producing to the horizon the lines *a h, a b* parallel to the sides *a a, a a*: set up the height of the caddy on the entering line *r r, r r*; these points produce to the vanishing points *b* and *h*: for the perspective angle *t*, bring down the intersecting line *e* to the entering line *c*, which *c* draw to S, and where it comes in contact with the line *r h* will be one angle of the caddy, as seen at *t*: by this means the top is to be formed.

Fig. 15. *shews how to draw perspectively a tripod base for a fire-screen.* Admit *a a a* to be the plan, and *r r r r* intersecting lines brought down from it; these lines are from thence drawn to S, the seat of the eye: for the sides, find

PLATE 5.

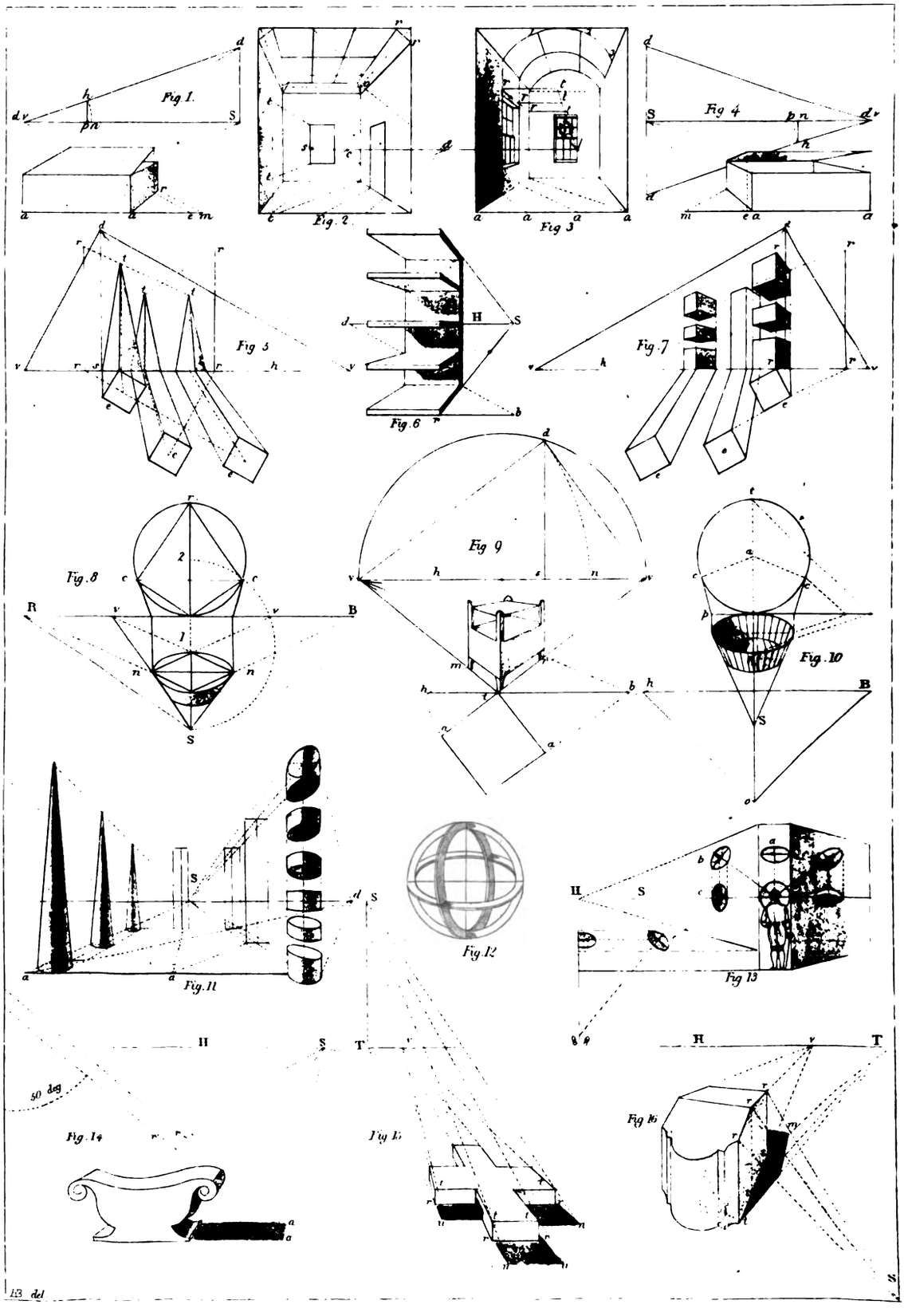


Fig 1.
Fig 2.
Fig 3
Fig 4
Fig 5
Fig 6
Fig 7
Fig 8
Fig 9
Fig 10
Fig 11
Fig 12
Fig 13
Fig 14
Fig 15
Fig 16
50 deg
H
S
T
B
R

the vanishing points, which are obtained by producing the lines *a v*, *a v*; to these two points the sides tend: for the angular blocks, find their vanishing points; this is done by drawing the lines *a b*, *a b* parallel to the sides of the blocks *d d*: lastly, the pyramidal part draw to S, which may be higher or lower as required.

Fig. 16. *How to draw an octangular tea-caddy in perspective.* *a a a* represent the plan, S the seat of the eye, and *h b* the vanishing points; which are obtained by producing to the horizon the lines *a h*, *a b*, and parallel to the inclined sides of the octagon: here set up the height of the caddy on the line *r r*, and draw the sides to *b* and *h*; for the angle *t*, bring down from the plan the line *e*, this draw to S, and where it cuts, as at *t*, will be the perspective angle of the caddy: the rest is plain to inspection.

Fig. A represents a wheel seen edgewise in perspective.

Fig. B represents a wheel in perspective seen frontwise.

EXAMPLES IN PRACTICAL PERSPECTIVE.

PLATE V.

Fig. 1. *The method of delineating the perspective representation of a box, having its lid partly open, with the hinge towards the spectator.* Admit *a a* to be the back of the box, S the seat of the eye, and *d v* the diagonal vanishing point: to obtain the width of the box, set its real measure from *a* to *m*, which produce to *d v*; for the vanishing point of the lid, take *a m* and set it to *d v n*, then describe a curve from *d v*; next set up the rise of the lid on *n h*, and produce a line from *d v* to *h*, and where it cuts, as at *d*, will be the vanishing point for the cover:

to cut off the perspective width of the lid, take *d p* and set it to *a e*, which produce to the diagonal point.

Fig. 2. *The method of finding the mitre lines for extending a cornice round a room; likewise forming a ceiling containing coffered compartments: and of perspectively obtaining the heights of windows at the remote end of a room.* Here the seat of the eye S is one third the width of the room, and *d* the representative point of distance: for the cornice, first form the section of the mouldings, as *r r*; these draw to S; and from the concealed corner *o* and the point *d* produce the mitre line, and from thence return the cornice along the end of the room: for the compartments in the ceiling, draw them to the diagonal point, and from the wall return them horizontally: the height of the window is set upon the line *t t t*, and drawn to any point in the horizon being in a direct line with that window.

Fig. 3. *The method of proportioning perspectively the compartments of a circular-headed ceiling, and of obtaining the situation of a window in the side of a room; alsosome remarks on the rays of the sun as seen streaming into rooms.* Set the original measures of the ceiling along the floor line *a a a a;* these draw to the diagonal vanishing point *d*, and wherever they cut the wall carry them up: to find the centres of the segments, first describe the arch at the end wall of the room, from that carry the line up to *r r r*, and again from the wall back to the centre line *t t t;* these will now be points for describing the circles on the ceiling; the horizontal lines are drawn from the divisions round the arch.—When the sun's rays which enter at the side window are parallel to the picture, they are always parallel to the room; but when they stream in at the window at the end of the room, they then diverge towards the spectator, upon the same principles as shadows.

Fig. 4. *The method of delineating the perspective representation of a box with its lid partly open, and the hinge side turned from the spectator.* This operation is precisely the same as Fig. 1. with only this difference; namely, that the vanishing point of the lid of the box is here below the horizontal line, instead of being above it, as in the before-mentioned example: *a e* is taken from the measure *n p*, seen on the horizon, which shews how much the lid retrogrades from the front.

Fig. 5. *How to draw perspectively a series of pyramids in an inclined position*

to the plane of delineation, and cut off by the horizontal plane. Let *e e e* be seats of the pyramids, *h* the horizon, S the seat of the eye, and *d* the point of distance: for the vanishing points produce two lines, *d v*, *d v*, parallel to the seats *e e e*; then draw visual rays to the point *d*, and the original heights *r r*, *r r* draw to *v*, *v*; then *t t t* will be the apex of each pyramid; these points are afterwards to be drawn to the bases.

Fig. 6. *shews the perspective representation of shelves as they would appear below the eye, above the eye, and when in a line with the horizon.* S shews the seat of the eye, H the horizon, *d* the diagonal vanishing point, and *r b* the original breadth of the shelves: the perspective breadth is obtained by drawing the point *b* to *d*, and *r* to S. It is to be borne in mind, that when shelves become higher or lower than the horizon, more of their surface will be seen: if the figure here be turned round, and *d* be considered as the ground line, then the shelves will truly represent perpendicular partitions.

Fig. 7. *How to draw perspectively a series of disjointed parallelopipeds in an inclined position to the plane of delineation, and cut off by the horizontal plane.* Let *e e e* be seats of the parallelopipeds, *h* the horizon, S the seat of the eye, and *d* the point of distance: for the vanishing points produce two lines, *d v*, *d v*, parallel to the seats *e e e*; draw visual rays to the point *d*, and the original heights *r r*, *r r* produce to *v*, *v*; then will the perpendiculars form the parallelopipeds required.

Fig. 8. *The method of finding the major and minor diameters of a conic bowl as seen direct.* R B is the given horizon, and S the station point: bisect the radial line S, 2, and on 1 as a centre describe the curve 2, S; then from the point of contact *c*, within the circle, form the trapezium, and find its vanishing points *v* R, *v* B; this is done by producing lines from the point S parallel to the sides *c r*, *c r*; lastly, bring down the visuals to the given line *n n*, and return them to their respective vanishing points; this will then give the diameters sought.

Fig. 9. *The method of finding, by a double process, the vanishing points of a tent-bed, when inclined to the ground line.* Let *a a t* be the angle the bed makes with the ground line, *h* the horizon, S the seat of the eye, and *d* the point of distance: for the vanishing points produce the lines *d v*, *d v* parallel to the angle *a a t*;

extend the line *a b* to *b*, and return *b* to *v*, then will *r* be the length of one side: for the second process, describe *v d n* and *t a h*, then draw *h* to *n*, and *m* will be the other side as required.

Fig. 10. *The method of finding the longer and shorter diameters of a circular vessel; also the vanishing points for the staves.* S is the original station, *h* B the horizon, and *o* the station point brought down from above: to get the point of contact *c*, bring a line from the centre *a* perpendicular to the line *c p*; and for the vanishing point of the line *c a*, produce the line *o* B parallel to it; this will then be a vanishing point for the part *c* and *t*; and S will be the required point for the staves.

Fig. 11. *shews the principles whereby to draw perspectively the representations of cylinders and cones, applicable to columns, when situated parallel and at right angles to the ground line.* S is the seat of the eye, and *d* the point of distance: set the originnl measures of the two receding columns on the entering line *a a*; these draw to *d*, and *r r* will be the places of the columns: for the cones, set up the height on the one in front, and draw it to S, the vanishing point of the eye.

Fig. 12. *An elucidation of the three various positions and changes a hoop or wheel undergoes by being thrown into perspective.* If seen direct before the eye, its image will be a circle; if turned perpendicularly and sidewise, its image will be a perfect ellipsis; and if turned horizontally, and posited above or below the horizon, it will also be an ellipsis: if its image appears twice as long as broad, then will the thickness of the ends be twice as much as the sides, and so on in any ratio.

Fig. 13. *An ocular elucidation of plain circles and globes as seen perspectively above the eye, below the eye, and in a line with the horizon.* If a circle be seen direct before the eye, it suffers no change of form whatever; if seen direct over the eye, it assumes an elliptic shape, with its longest diameter parallel to the horizon, as *a*; if seen perspectively inclined, as *b*, then its longest diameter inclines to the horizontal plane; if seen on the horizon, as *c*, then its longest diameter will be perpendicular; if seen on a level plane, as *e*, not in the direct line of the eye, then its longer diameter will likewise incline to the horizon, and the

shorter diameter to the eye. Globes are just the reverse of plain circles, as the right-hand side of the diagram shews.

To produce a shadow, two things are always given; namely, light and body: light, though quite opposite to shadow, is, nevertheless, that which gives it being, as the object gives it form. To conceive the nature of shadows clearly, and render the practice easy, it must first be observed, that there are three positions of the sun to the picture, and two points to be made use of; one of which is the seat of the light that falls upon the horizontal line; the other is from the luminous point itself. Shadows may be considered of two kinds; viz. those of nature and those of art. The shadows in nature are caused by the sun, whose rays, in consequence of the immense distance of that body from the earth, are said to be parallel to each other: hence shadows of objects produced by the sun's beams are geometrically projected in no other direction than parallelisms; but in a picture, by being thrown into perspective, they are either represented diverging or converging; except when the sun's rays are parallel to the plane of the picture, in which case the shadows will also be parallel. The shadows of art are those caused by a candle or other light, whose seat is always on the floor, and whose rays diverge from the flame upon the picture in all directions.

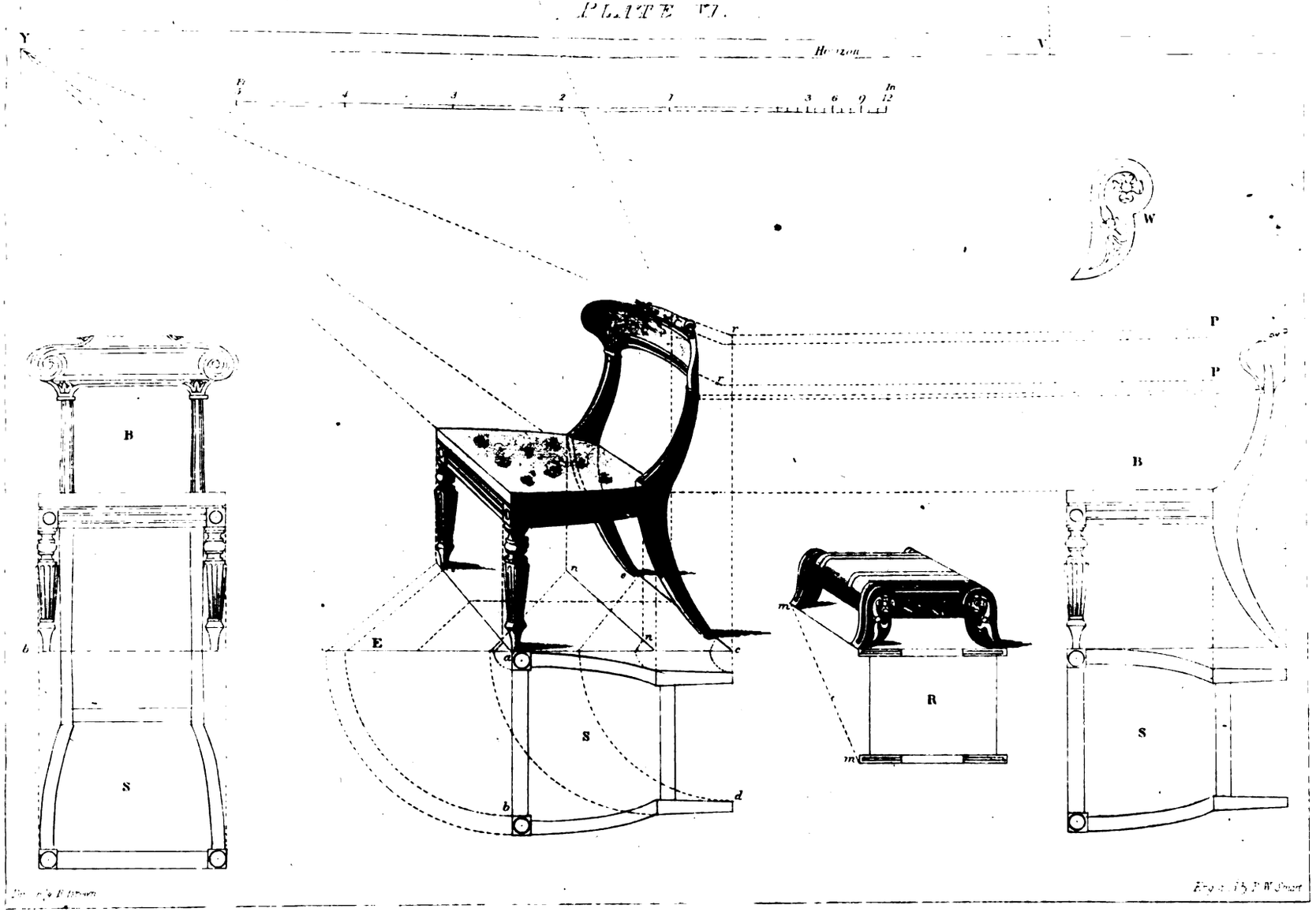
Fig. 14. *Having given a cheese-tray, from thence to cast its shadow on the ground plane, the sun's rays being parallel to the plane of the picture and front of the object.* Here the sun's beams being parallel to the picture, are simply drawn by the parallel ruler over the two corners of the object *r r*, and from thence intersected by the horizontal ground lines *a a*, and produced to the horizon S. Remember the greatest elevation of the sun's rays in summer is 60 degrees, and the lowest in winter 24 degrees.

Fig. 15. *Having given in a recumbent position a cross, from thence to project its shadow, the sun being in the picture.* S represents the situation of the sun, and T its seat on the horizon, which seat is brought down from the luminary S: now project lines from the lower visible angles of the object, as *r r r r*, by T, and bring down lines from the luminary S to touch the upper angles of the object *t t t t*; then where they intersect the base line as at *u u*, *n n*, will be the termination of

the shadows; next produce *n n* to the vanishing point of the object *v*, and the shadow will be completed.

Fig. 16. ***Having given a knife-case, from thence to define its shadow, the sun being behind the spectator.*** Here the sun cannot be seen, but its vanishing point may be obtained by setting downwards from the seat of that body, as T, seen on the horizon, a distance equal to the sun's elevation above the horizon; S represents that point: for the operation, produce lines from the top of the case *r r r* to the vanishing point S, also from *t t t* to T, and where they intersect will be the boundary of the shadow; lastly, draw *m* by the vanishing point of the back of the case: *v* is the vanishing point of the case, and H the horizon.

PLATE VI.



RUDIMENTS OF DRAWING CABINET FURNITURE.

PLATE VI.

DINING-ROOM CHAIR AND FOOTSTOOL.

To delineate the chair in a perspective position, as shewn in the opposite plate, first draw the floor line E, and secondly the horizontal line parallel to it, which is here 5 feet 6 inches high from the floor line, being the medium between tall and short persons in general; next lay down the seat of the chair variously as shewn at *s*, *s*, *s*, and project from them the two orthographical elevations B, B. For the scenographic view, set off from *a* to *b* 4 feet 6 inches, which carry up to the horizon Y; this will then be the seat of the eye: from Y set off to V 9 feet 6 inches, which is the supposed distance the observer stands from the chair: this distance now becomes a vanishing point for all lines situated in an angle of 45 degrees, but for no others. Next describe round the lines *a b*, *c d* to the line E, and from thence draw the points to the diagonal vanishing point V, and the points *a*, *c* draw to Y, the seat of the eye; and wherever these lines intersect, as at *e*, *e*, will be the perspective points of the legs of the chair upon the floor. To find the back of the chair perspectively, produce lines in a horizontal position from the profile of the back, as P P, to meet the corresponding intersecting lines *r r*; these are then to be drawn to the seat of the eye: lastly, if lines be brought up from *n*, *n* to meet their corresponding lines, it will then give points by which the back is to be formed, and the chair to be completed. R represents a footstool, situated parallel to the chair above explained; which stool likewise converges to the point Y, because all objects situated parallel to each other tend to the same common vanishing point. To obtain the vanishing point to cut off the

breadth, circle round the horizon Y V to the line running up from Y; to this point then draw *m m*, which will complete the stool required. W shews the foot of the stool quadrupled.

REMARKS.

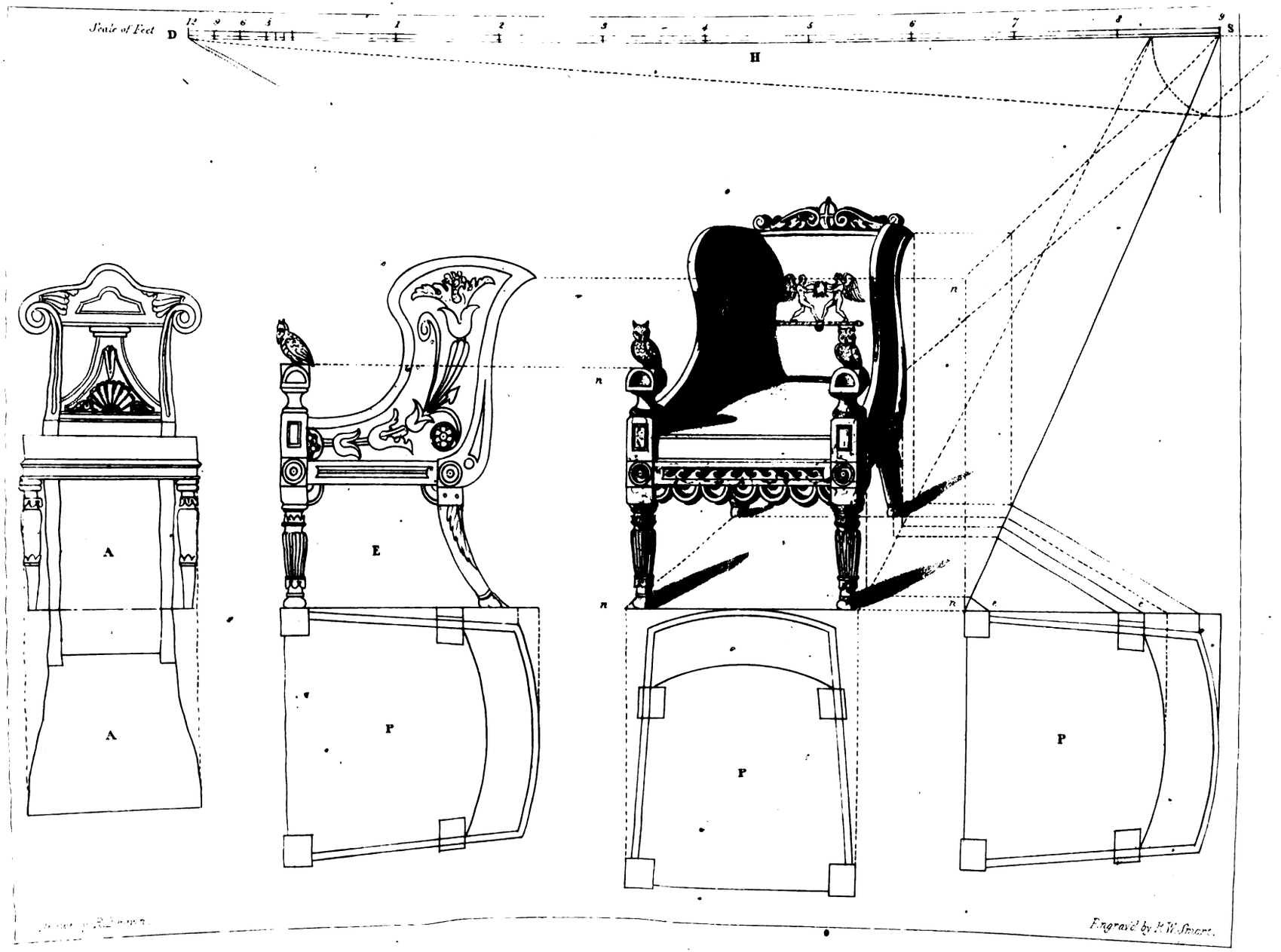
This article has lately undergone a far greater improvement than any other branch of the cabinet art, insomuch that it now baffles the most skilful artist to produce any new forms: still, however, many chairs are very uncomfortable to sit upon, in consequence of the raised carved work on the splat and tablet of the yoke rail, though ease should be the great desideratum. Hall chairs should have on the backs family arms and crests, which, being emblazoned in proper colours, produce a most beautiful effect.

PLATE VII.

LIBRARY AND WITHDRAWING-ROOM CHAIRS.

The perspective operation for drawing this article is precisely, in every respect, performed the same way as the foregoing; but in this plate it will be seen, that the library-chair is represented with the front towards the spectator, whereas the dining-room chair has its side turned towards him. P shews the ichnographical projection or seat of the chair, and E represents the orthographical projection or elevation of the same, proportioned accurately by the scale above, that the workman may be enabled to execute from the same. The floor line F is next produced, and the seat of the chair P again repeated for the perspective operation; after this, the horizon H is drawn, and the seat of the eye S assumed: the lines from the seat P, below the perspective object, are to be circled round to the base line F, and from thence, as *e e*, carried vertically through the chair. The respective heights of those parts of the chair which the lines are intended to represent, are obtained by drawing horizontal lines from the elevated side of the chair to

PLATE VII.



the vertical line *n n n*, and from *n n n* again drawing them to the vanishing point directly opposite the eye of the observer, as S. There is no other mode of procedure for determining the apparent forms of curved lines, than by finding points in the curvature, and by obtaining such a sufficient number of them, that the hand may be enabled to trace the curve through them with adequate correctness. Solids bounded by planes are very soon delineated; but with respect to curves obliquely seen in perspective, compasses will not describe them, for a straight rule will in nowise coincide with a curved line between any two points. A A shews a design for a drawing-room chair, with a baulister back projected orthographically from a given seat below, according to its real measures taken from the scale.

REMARKS.

On the back of this chair are introduced two genii striving for the bays, and on the front legs, two horned owls: this bird being sacred to Minerva, and emblematical of wisdom, is often denominated the bird of Athens. Against the side of the chair is seen the lyre of Apollo, the god of poetry, of the Muses, and likewise presiding over the sciences. Those classic embellishments may be varied according to the taste and judgment of the designer, *ad libitum*. Perhaps no one ornament is more appropriate for the library than the laurel, it being exclusively an emblem of reward, employed for entwining the brows of poets and others famed for science and erudition. And here it may be well to observe, that this single ornament is more frequently abused or misapplied than any other ornament whatever, even by ridiculously introducing it into linen-drapers' shop-fronts in and about London; but wherever this absurdity occurs, provided the front is designed by an architect, it shews the greatest possible defect of taste, and calls forth the severest criticism on the composer. The same misapplication is equally censurable in cabinet works.

PLATE VIII.

A LOO-TABLE.

THE first process to perform in drawing this circular piece of furniture is, to lay down correctly by a scale the top of the table, and seat of the triangular block, with its pyramidal standard, as *b b b*; secondly, to produce the floor line F; and, thirdly, the horizontal line H, which is here about 5 feet: next, the pupil must fix the place for his observation, as P O, and to it draw the visual rays *r r*, and from thence again produce them perpendicularly to the top of the table; after this, the line R T is to be drawn, to touch the edge of the profile of the elevation, which line exactly corresponds with the sectional floor line F its seat; next take the distance *n* P, and set it along the horizontal line from T towards V (which distance here falls beyond the plate); to this point the visual line *e e e*, to intersect the edge of the transparent plane T R, is to be produced: but the student must first find the chord of the tangents at the plan, that it may be applied to the elevation: to perform it, the centre line S O must first be bisected; then on the bisected division as a centre and S as a radius, the dotted curve is to be described, which curve will give the chord required, as *h h*: next take the measure *n m*, and set it from *i* to *i*; this will be the corresponding point at the elevation, which, if drawn to the distance that falls off the plate, will give its perspective intersection on the line T R: this is now to be produced to the perspective object, and trammeled round for the top of the table. Lastly, to form the block, produce the intersecting lines *u u u* from the plan, and draw the dotted line P N for their vanishing point, which carry up to the horizon; to this vanishing point the lines *k k* are now to be drawn, and intersected by the visual rays being brought up, which completes the article. B shews another design for a loo-table.

REMARKS.

This table being used to breakfast on, and sometimes for playing at loo, may have the tea-tree and coffee-plant for its ornaments, with the masks of Ceres and

PLATE VII.

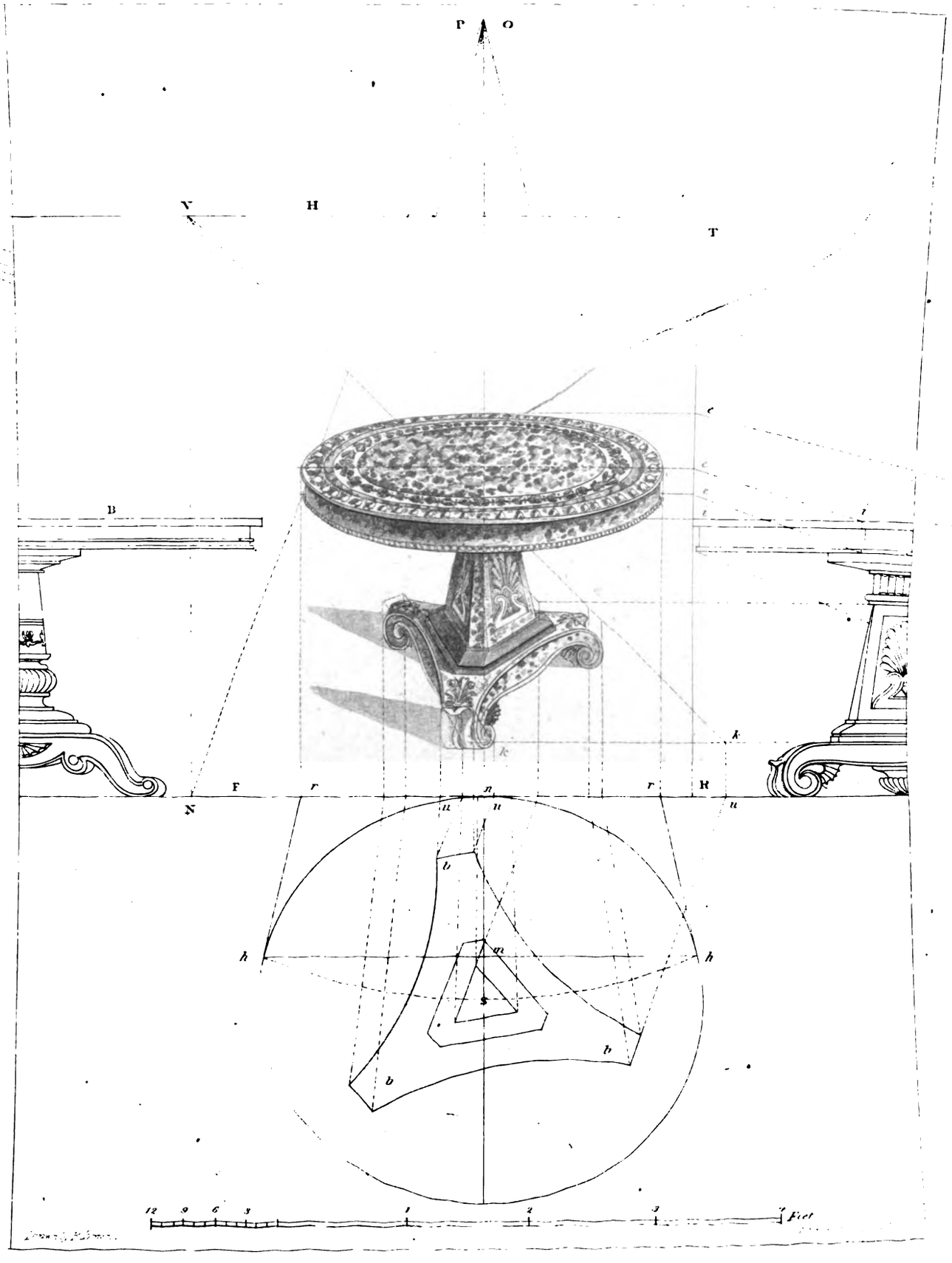
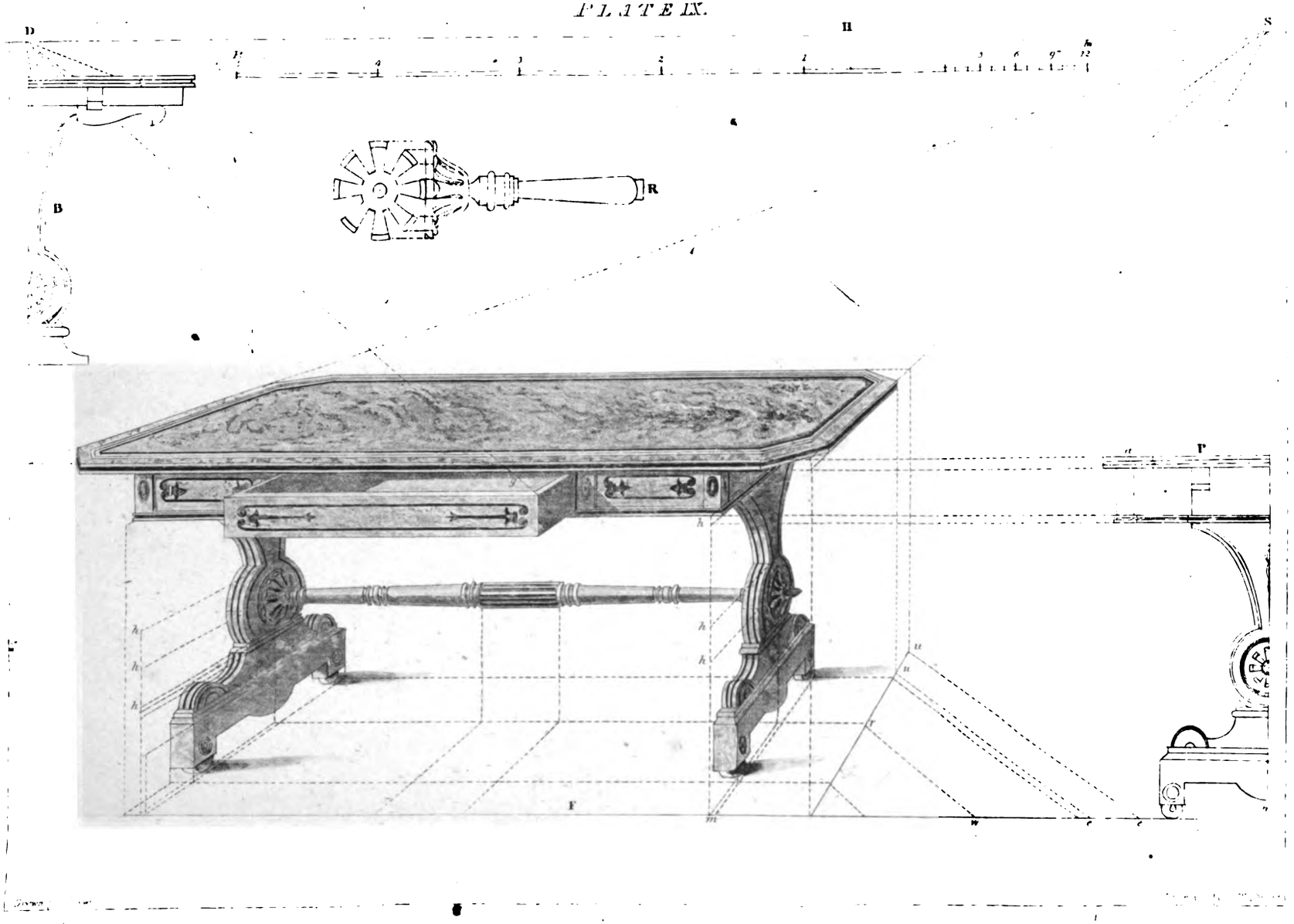


PLATE IX.



Bacchus. The cornucopia is perhaps best adapted for a dining-table. Fruit may likewise be introduced into this article; but no flowers whatever, unless they are quite appropriate. And here I shall notice a very absurd misapplication of ornaments; namely, that of inserting stars of brass on the tops of tables; when it is clear, that they can only with propriety be introduced into beds, girandoles, chandeliers, &c. As this table is applied to a double purpose, that of breakfasting on and card-playing, perhaps the mask of Comus, the god of festivals and mirth, will be found to accord. The brass ornament in the standard of this table I have taken from a terminal tile on the cornice of the Parthenon at Athens.

PLATE IX.

SOFA WRITING-TABLE.

To draw this article perspectively, first form the profile P by the scale seen above the table, then draw the floor line F, and next the horizontal line H, which line is 5 feet 5 inches in height from the floor, set off about 4 feet from *m* to *n*, and draw it up to the horizon; then will S be the seat of the eye: from this reference set off to D about 8 feet 9 inches, or 9 feet, for the diagonal vanishing point, which will then complete the necessary working points. The respective heights of the different parts of the standards and blocks, as *h, h, h, h, h, h*, are to be taken from the profile P, and from thence produced to S, the rectangular vanishing point; and the lengths of the blocks and breadths of the standards are next taken from the original measure on the profile, and placed on each side the centre W: these are then drawn to D, and from their intersections on the line *r* produced horizontally, and where they intersect the corresponding lines are thence produced perpendicularly, their conjunctions giving the above respective parts of the standards and blocks. To obtain the top of the table perspectively, and to cut off the octangular corners, bring up the width of the top, with the quantity that

is to be cut off, as *u u:* these portions are first taken from the profile at *a*, and placed at *e e*, and from thence drawn to D. For producing the drawer, set the intended projection from *g* to *g*; then the line D *g* projected forward, will shew the quantity coming out. R shews part of the stretcher and rosette at large, and B a standard for an occasional table without drawers. In this article it is seen that the furthest standard becomes the largest, which to the student may appear unreasonable; but in parallel perspective it will ever be the case, if the principles are rigidly attended to, which must be by the learner, but to the proficient a license is allowed to assist it by the eye, he knowing the boundaries of rule.

REMARKS.

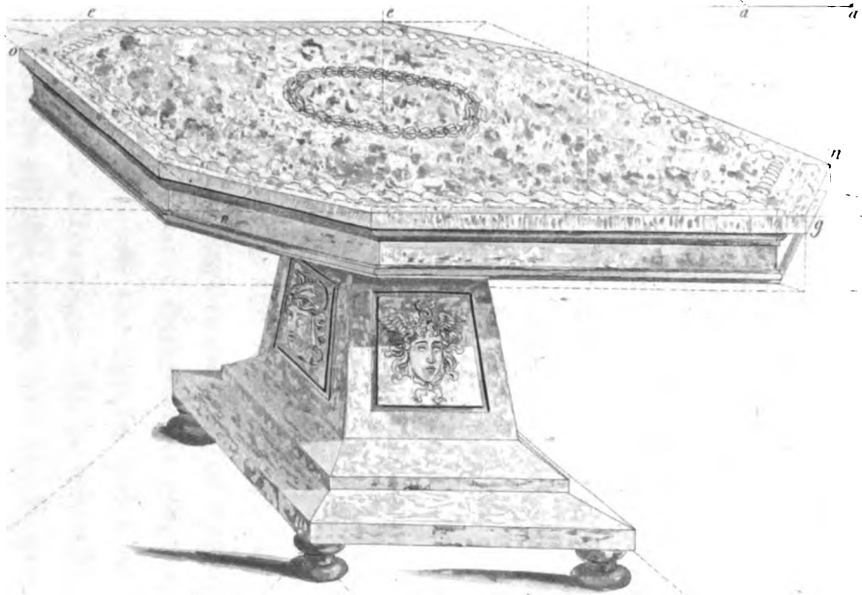
This writing-table, if ornamented by allusive mythology, should contain heads of Mercury, placed on partitions between the drawers, this deity being said to be the inventor of letters; and his emblem, the caduceus, may be introduced on the standards below. If botanical enrichments are inserted, then the celebrated papyrus plant and flower, from which paper was first made, would be appropriate. This plant grows in Egypt, Syria, Sicily, and Madagascar; and has flowered finely in England. There is a very beautiful one of a new species, found by Dr. Sibthorpe on the banks of the Rhyndacus, between Smyrna and Bursa, as well as in some of the Greek islands.

PLATE X.

A LIBRARY-TABLE.

To draw this octangular library-table, first form as before proportionably by a scale the figure of the top A B, *m m* G, likewise the standard; produce the line of projection L L, and the horizon H D, both parallel to each other; carry over the parallel line *r* to *g g*, and from thence draw it to S, the seat of the eye. To get

PLATE X.



Drawn by P. Brown

Engraved by H.W.

the opposite width of the table, find half the distance between S and D, and set half the measure of the table-top from *r* to *r*, and draw it to the half-distance point in the horizon, then will O be the width of the object perspectively. Now draw *g n* to D, and *g n* to S; draw *n* parallel to the front along the table, which will give the hither cants, then draw *g* to *e* in the direction of S: and if *e* is now brought back from S, and back by D, then will the top be perspectively formed. L *n* gives the measure inwards of the base of the standard from the edge *r*, and *n n* shews the real measure of the base of the standard. The diagram T represents the geometrical construction of the perspective lines, as they would be applied and drawn to the perspective points on the top of the table: for example, *a a* would, if applied to the perspective object, be drawn to the point S, and *b b* would be drawn from the diagonal point O, &c. A shews the apex of the pyramidal standard, if the frustum were produced upwards; V the height on the inverse projection of the table, and P the perspective point. R B shews another design for a standard, with some variations in the combinations of its mouldings, which it is deemed will be useful to the cabinet-maker in the way of composition. The mouldings in this design are considerably flattened to elliptical forms, that the whole of their contour may be seen below the eye as much as possible: the semicircular mouldings have not this advantage. It is somewhat remarkable that the Greeks always adopted the elliptic curve, and the Romans continually the semicircular one.

REMARKS.

In the centre of the top of this table is introduced the laurel-wreath, as an emblem of Fame; but the bays may be inserted, as the one is always a substitute for the other. On the sides of the pyramidal pillar are placed masks of Minerva, the goddess of wisdom; Mercury, the alleged inventor of letters; Apollo, the god of poetry; and Cadmus, who invented sixteen letters of the Greek alphabet: these are all appropriate to a library-table, being also emblematical of the sciences. If the top of this table were supported by whole-length figures, they should then be some of the Muses. Clio being the Muse presiding over history, if preferred, her mask may be substituted on the pillar of the table for that of Mercury; or laurel-wreaths may be introduced in the standards instead of masks.

PLATE XI.

A DINING-TABLE.

THIS object is projected orthographically, and not scenographically, which delineations for some round articles of furniture are unquestionably equal to a perspective representation, and are more quickly made. The operation is as follows: First lay down the form of the top of the table, as T T, and draw the plan of the block *b* within the centre of the top; likewise mark down the seat of the five pillars on the plan: next form the edge of the table *e e*, as it would be seen, when turned up, by an eye perpendicular over every part of it. This being done, the line of projection is next to be determined: here it is necessary to observe, that some consideration is requisite in placing this line, that the pillars may conceal each other as little as possible, at the same time to shew the top to the best advantage. In this plate the line of projection is drawn from the plan of the angle of the top block to the rim of the top of the table, as L L: to this directing line, in parallelisms, now draw dotted lines from the respective parts of the top, and also from the angles of the block; which lines afterwards, on *o* as a centre, revolve round to the horizontal line H, this will then give the orthographical situations: from these points also carry up lines to the horizontal lines of the blocks, that will give their true shape in the elevation, as *b b b*. To obtain the position and elevation of the top of the table, first find the centre of the elevation: to do this, take the measure from the plan seen at *u u*, and set it up on the corresponding line *r* R, then will R be the centre of the top of the table; from this centre half is now to be set above, and half below, which will evidently accomplish the object intended. On the left hand are shewn ichnographical and orthographical projections of a sarcophagus wine-cooler, and on the right an angular geometrical representation of a knee-hole table. This rule may likewise be applied to a sideboard, as the diagram shews.

PLATE XI.

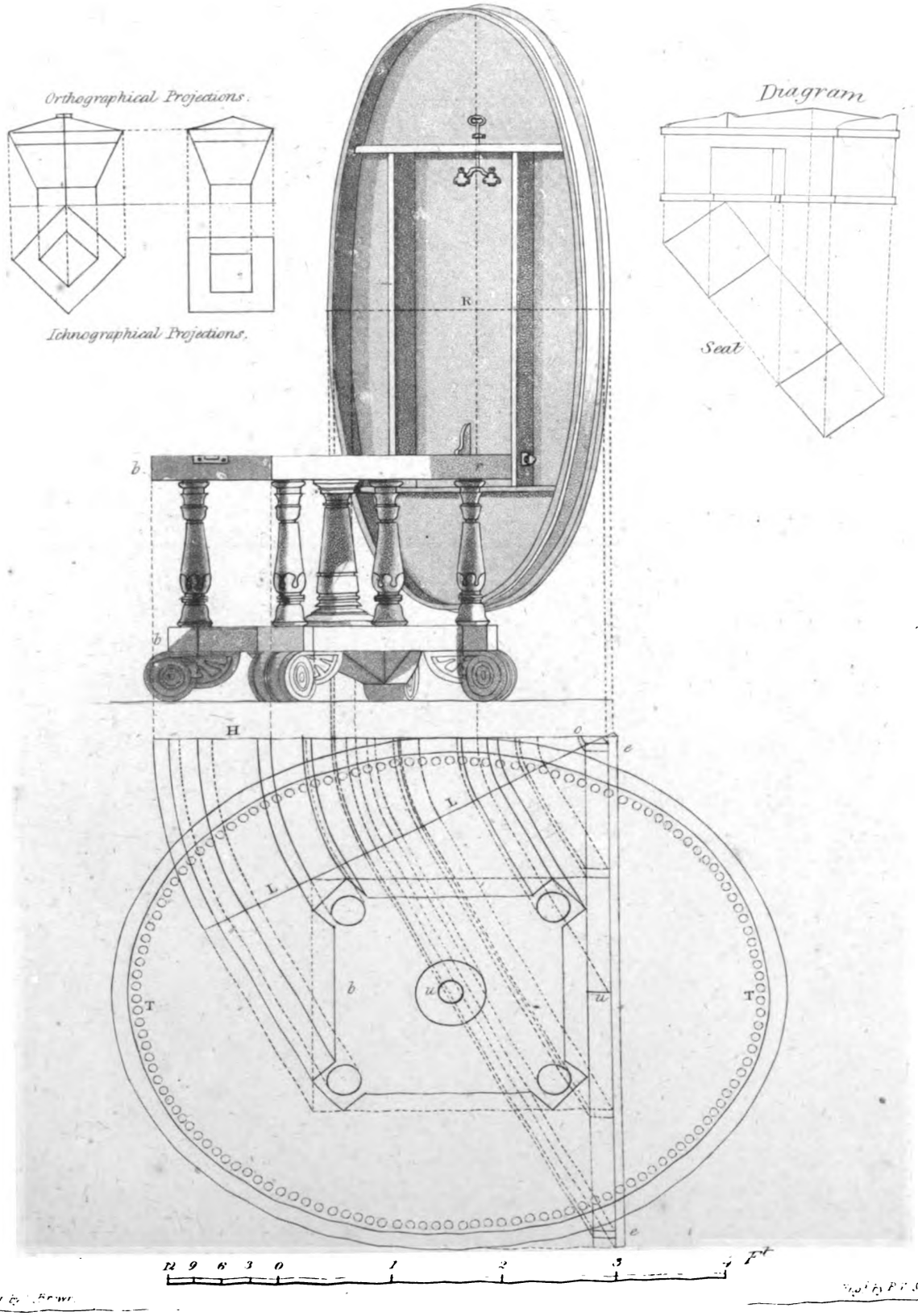
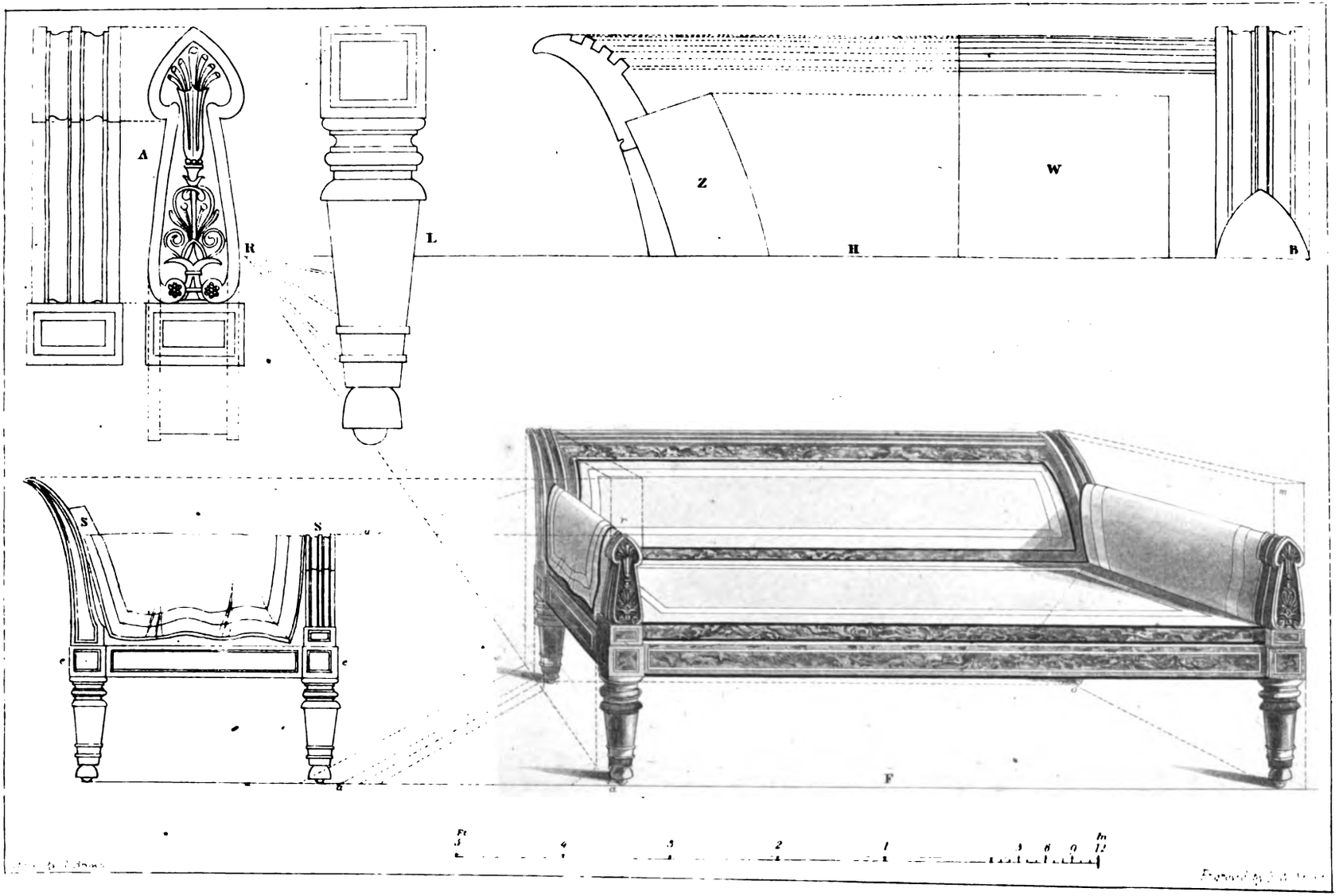

Orthographical Projections.
Ichnographical Projections.
Diagram
Seat
R
b
H
L
T
u
e
12 9 6 3 0 1 2 3 Ft

PLATE XII.



REMARKS.

The above table being appropriated to dine on, should be enriched with broad ornaments (if any be deemed necessary), as well as those which are consistent; for which purpose the branches of the bread-fruit tree, with its fruit also, are most proper: it grows in the highest perfection at Otaheite, and is found in other places within the tropics, constituting the principal food of the natives. This table may likewise be banded with hops, inlaid in a serpentine form: although it may be considered a common plant, yet it forms a very beautiful ornament when chased and inserted in wood. The mask of Ceres, the goddess of corn, is also allusive to this article of household furniture; and it may be further observed, that the mask of this goddess, with the corn in her hair, produces a very picturesque effect. Representations of fruit of all kinds are proper in dining-rooms; flowers only for the drawing-room.

PLATE XII.

A SOFA.

As the operative lines in this plate are so very few, and their connexion so intelligible, the student cannot fail of understanding the perspective process for delineating this article, almost by bare inspection of the lines themselves, without any references. However, as many pupils have not perseverance enough to go through the previous problems connected with a work, and the lines of a particular plate may be singly studied by them, I shall therefore proceed to explain. F is the floor line; H the horizontal line, which line is here placed 5 feet high from the floor; R is the vanishing point, and B the representative point of distance. The width of the sofa is now to be taken from the profile *e e*, and placed at *a a*, and from thence drawn to B; and the line *a* is next drawn to R; then, where they intersect on the line *c*, they are to be drawn up perpendicularly: this

gives the perspective width of the sofa. To obtain the perspective breadth of the seat, the original measure must be set from *n* to *n*, and drawn back to B, and where they cut the elbow, will be the representative depth of the seat. To find the perspective length of the elbow or end, *s s* is to be taken, and set from *r* to *u*, and then drawn towards B: by this the length will likewise be determined. Finally, *m* will give the height of the back perspectively if drawn to R. The cushions of the sofa are purposely left out, to shew the frame more entire, this being the most essential part to be known by the student. L represents the leg of the sofa triplicated, and A shews the front and one side of the arm in the same proportion, that the brass ornament which it contains may be more clearly understood; Z represents the section of the back, and W part of the elevation of the sofa enlarged. It is best to shew a little of the back foot of the sofa at the right hand corner; to do this, a greater distance or low horizon must be taken.

REMARKS.

Although sofas as well as chairs have been allotted to the design and execution of one part of the trade exclusively, by which means the chairs have received the highest improvement, yet sofas are as ridiculous and unmeaning in their forms as ever. This article, according to historians, is of Eastern origin, and appropriated only to the great, who sit on it cross-legged; and in Persia, chairs are not even used at the present day. As the sofa is an article of luxury (for, according to Cowper, "necessity first invented stools, convenience next suggested elbow-chairs, and luxury the accomplished sofa last"); so the ornaments should relate to ease and composure: for this the *gramen caninum*, or couch-flower, and the garden heartsease, are very appropriate; next honeysuckles, eglantine, or Turkish ornaments; or a greyhound couchant may adorn the end of the settee.

PLATE XII.

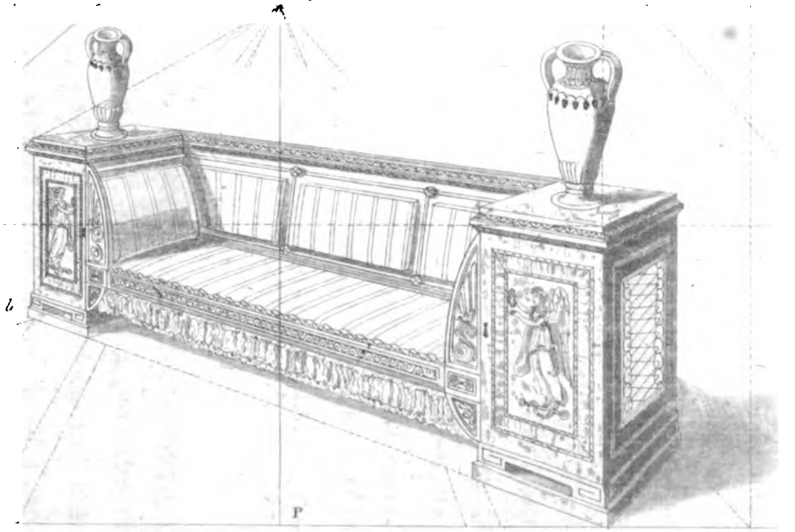


PLATE XIII.

AN OTTOMAN.

In this plate is shewn a method of drawing any article obliquely by only one vanishing point; as it is often required that an object of extraordinary length should have the point very remote for its longest side, to prevent that disagreeable disproportion seen between the nearer and more remote pedestal. In this example, lay down the angle that the ottoman makes with the floor line F as seen at A, *a a*, and measure along its length as A R; next draw the floor line F, and the horizontal line H; assume the centre of the picture *c*, and set from the floor line P to D the representative distance you are supposed to stand off from the floor line; next from D produce the line D *g* parallel to the angle of the article, as A *a*, and from that carry it up to V in the horizon; this will then be the vanishing point for the end of the object, and to which all lines parallel to the end are drawn. For the front of the ottoman, bring down the line R to *m*, and from thence draw it to *c*, the centre of the picture; next bring down the line T to *n*, which produce to V, its vanishing point; then will their mutual intersection, as *b*, be the remote angle of the farthest pedestal. To find the top of this pedestal, over the line *b* bring forward a line horizontally from the elevation to W, which produce to *c*; this will then give the height of the pedestal required, which may now be completed by drawing lines from the higher one. To perceive the above operation clearly, suppose the angle of the ottoman A to be placed at G, in the same direction as it now lies, and the intersecting lines *e e*, &c. brought to the floor line F, this will then shew a closer connexion; but if the plan A *a* R T is turned underneath, first A at G, and T at *n*, then the whole operation will be seen quite clearly. B shews the wire-work on a large scale, and *n* a footstool belonging to the ottoman represented in a parallel position.

REMARKS.

Ottomans are chiefly intended for music-rooms and picture-galleries, and in that case they should be ornamented with the lyre and musical instruments; they

may likewise be of the Turkish form. This design is intended solely for a boudoir, or a cabinet, and therefore contains a commode at each end, with a winged figure of Victory inserted in the panels, and the pedestals surmounted with two antique *amphoræ*. What Dr. Johnson says of the poet, will with propriety apply to the designer: that "he should range mountains and deserts for images, and picture upon his mind every tree of the forest and flower of the valley; whatever is beautiful and whatever is dreadful should be familiar to his imagination; the plants of the garden, the animals of the wood, and the minerals of the earth, should all concur to store his mind with inexhaustible variety, that he who knows most may have most power of diversifying his objects."

PLATE XIV.

A DRESSING-TABLE.

This piece of household furniture offers a very good lesson in perspective, on account of its swing-glass and disjointed top: to perform it, first draw the floor line F; secondly, the horizontal line; and thirdly, fix the seat of the eye marked S, also the diagonal vanishing point D P; lastly, determine the place of the standard, as *a a*. The preliminaries being now settled, proceed to draw *a a* to the vanishing point *s*; then take the length of the table from the plan *e e*, and set it on the floor line from *a* to *m*; afterwards produce *m* to D P, and *n* will give the length of the table seen perspectively. Next produce lines from the geometrical end of the table, as *b b*, to the perspective object; then draw them from thence to S, the seat of the eye. Now to shew the revolution of the flaps of the top as turned on their hinges, proceed by taking the real measures from the plan, as *e e*, *e e*, and set them along the line *r r r r*; these proportions produce to D P, and *t t t* will be the perspective divisions of the top. To draw the flaps of the table in a given position, it is always best to describe the arcs they would make by a perspective

PLATE XIV.

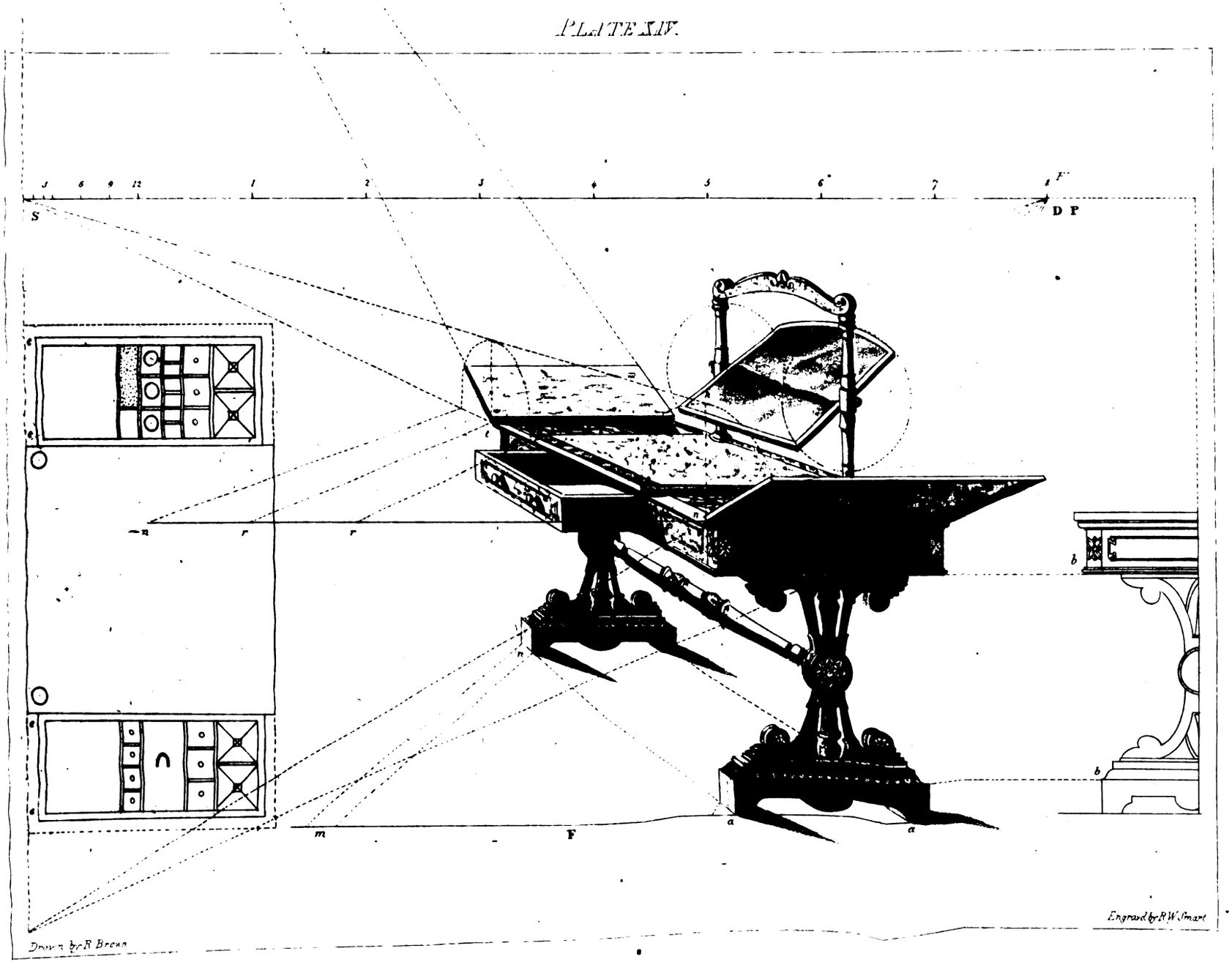
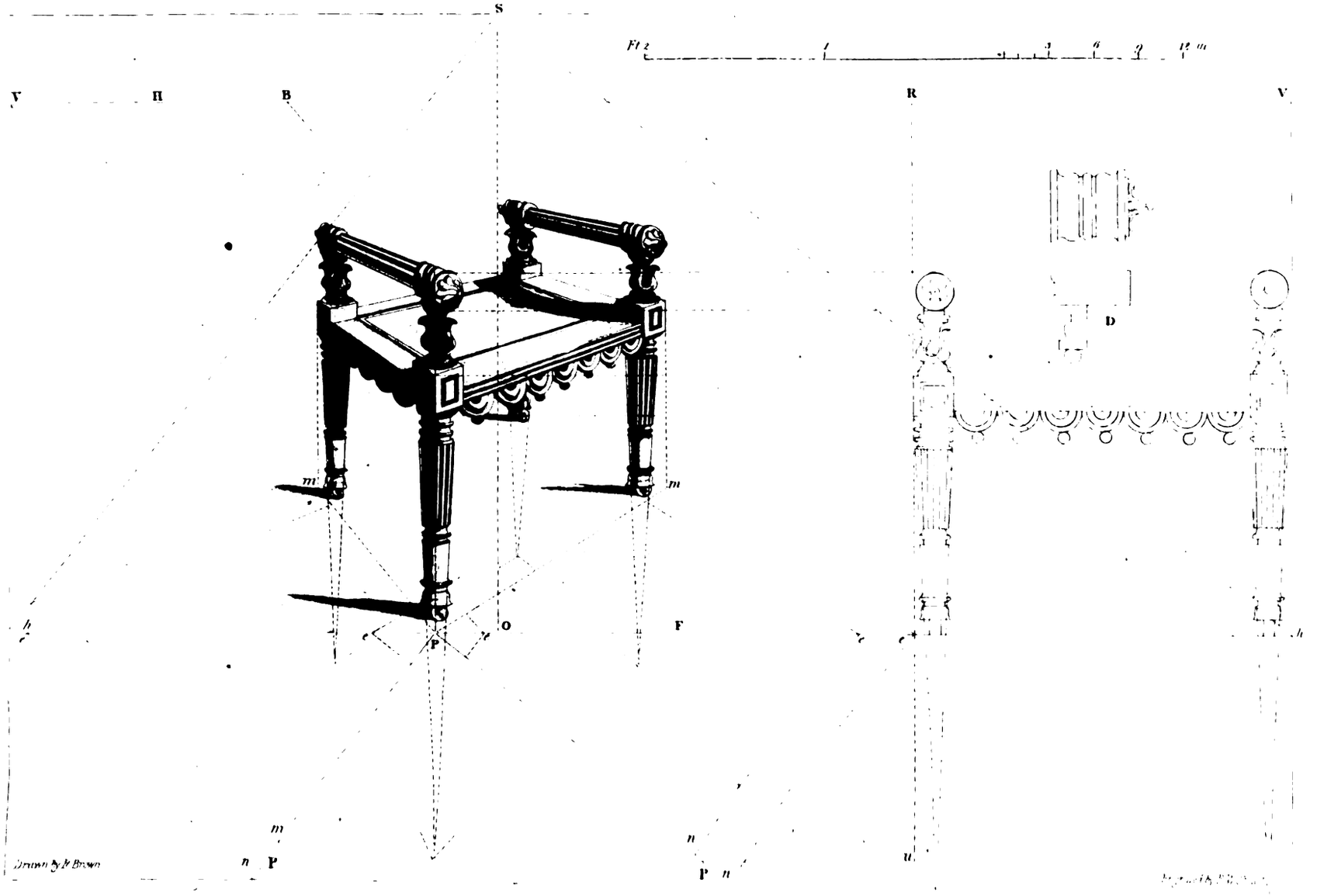


PLATE XV.



revolution. Now the original generating curves being semicircles, the perspective ones, by being viewed obliquely, will consequently be elliptical. To describe them perspectively, set the width of the flaps from *r* to *n* at one end, and from *n* to *n* on the other, at the left of the table, which draw to D P, and the right project forward by D P; lastly, take *n r*, and set it upon the line *n h*; this point draw to S, and it will give the height and breadth by which the curves are to be drawn, and by which the flaps are to be formed. The glass on the top of the table revolves a semicircle; the drawer of the table is drawn out parallel to the floor line.

REMARKS.

A dressing-table or toilette does not present so many appropriate ornaments as some other articles of household furniture: the embellishments applicable, either from mythology or botany, are, the Graces, with their attributes; foliage and flowers producing perfumes, as bergamot, jasmines, roses, lilies of the valley, &c.; and running fig-leaves, to denote the dress of our first parents, may with equally propriety be adopted. But let it at all times be observed, where no correspondent ornament can be found to embellish a piece of furniture, that one of an opposite character is not admissible: in that case introduce an ornament of no peculiar character. In addition to the essential modifications of utility and convenience, the secondary objects, elegance and beauty, are indispensably necessary to be studied to render each piece of furniture a graceful and pleasing article.

PLATE XV.

WINDOW-SEAT.

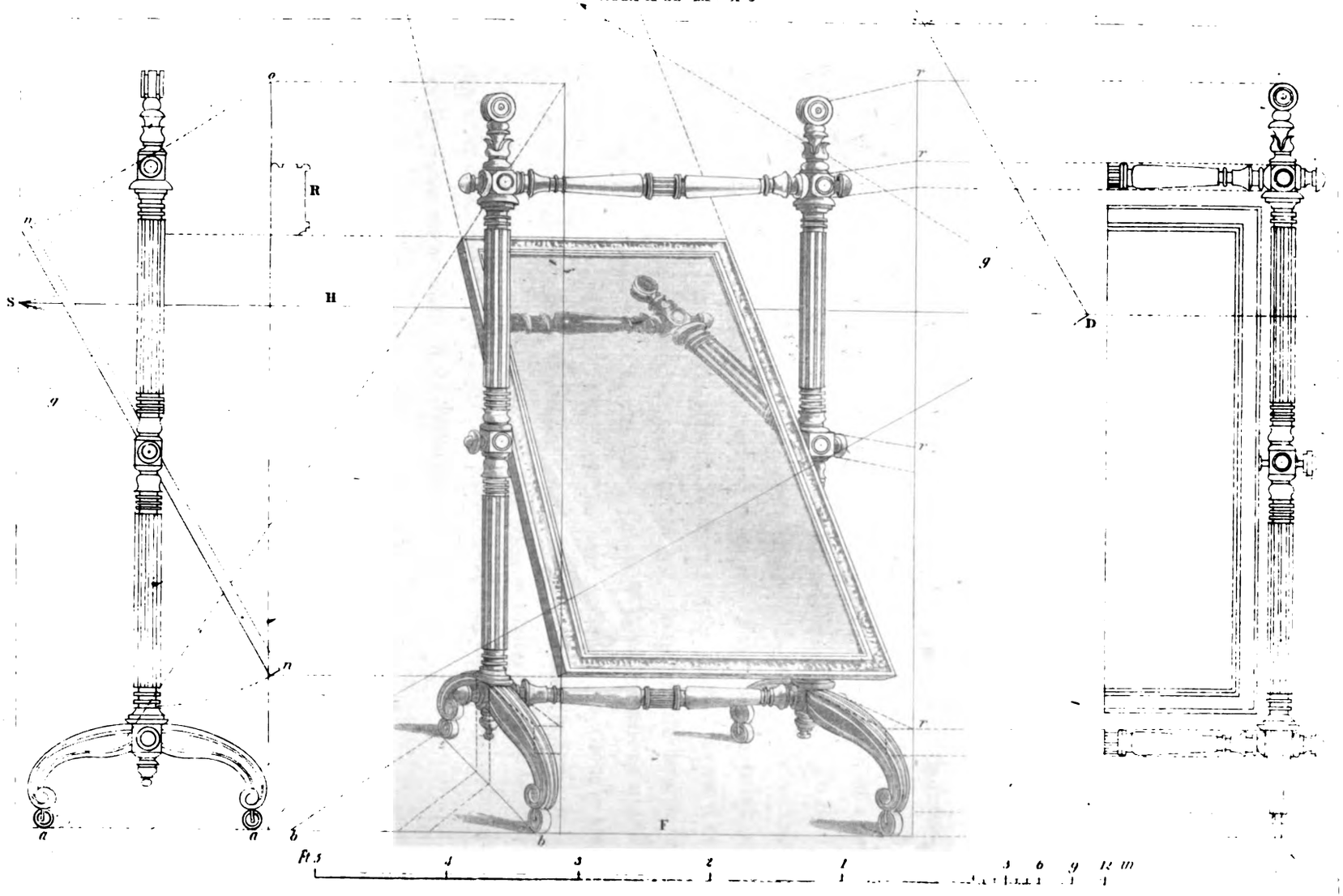
To make the work as complete and general as possible, this object is given in oblique perspective; but to shew the connexion of the operative lines on the plate, a very near point was necessary to be taken, which has produced a visible

distortion: this, observe, the young cabinet-maker is to avoid in making his drawings, which may be done by standing more remote. Now first draw the line of projection F, then place the plan P P P in an oblique position to it; next produce the horizon H, and from the representative station point S draw the two lines S *h*, S *h* both parallel to the plan P P P; then will *h* and *h* be the seats of the two vanishing points for the object, and which are from thence to be carried up to the horizon V V: now produce the four lines *n n*, *m n* at right angles to the lines P P P until they come in contact with the floor line F; next, from the references *e e e e e e* draw these lines to their respective vanishing points V, V, and wherever they cut the line P *m*, P *m* will give the perspective diminution of the object; the measures are from thence to be carried up perpendicularly. To find the perspective length of the front leg, take the distance O S, and set it on the horizon from the side of the geometrical object R to B; then will the point *u* beneath the profile in the line receding to B, if from thence carried forward to the perspective seat, give the converging point of the leg: to obtain the length of the others, produce it to the respective vanishing points V V, which will complete the article required. D shews the detail of the seat at large. Although the oblique position of an article of furniture is the best and most natural in a drawing, as to a picture; yet it is not so well to a cabinet-maker, because he cannot ascertain its measures without a profile, and a workman cannot execute correctly from the same on account of its obliquity.

REMARKS.

The only ornament in the annexed design taken from nature, is the Egyptian lotus, or water-lily of the Nile: Iamblichus says, that Osiris was thought to have his throne in it. If this window-seat were to be ornamented classically, its proper embellishments, either carved in wood or inserted in buhl, should be, the head of Fessonia, personifying weariness, and running flowers of English heart's-ease, or pansy-violets, a low trailing flower, very delightful for its fragrance: but whatever other flowers or foliage are introduced into this object, it is to be recollected, that they should be relative to rest and composure, for which the article is immediately designed. All the mouldings, too, should be optically studied,

PLATE XVI.



that their whole contour may be visible below the eye, as well as when even with the horizon; a circumstance which appears to have been generally overlooked by cabinet-makers up to the present day.

PLATE XVI.

CHEVAL DRESSING-GLASS.

In drawing this object, an horizon of 4 feet is adopted; because the observer, in viewing the article, is supposed to be sitting on a chair, although the glass is intended for persons to view themselves in when standing: and here it may be proper to remark, that in drawing cabinet furniture, either a low horizon, or a long point of distance, should at all times be used, to render the appearance of the article more agreeable to the sight. For the operation, let F be the floor line, H the horizon, S the seat of the eye, and D the diagonal vanishing point, or representative point of distance: take the measures *a a*, and set them on the floor line from *b* to *b*; these draw to the diagonal point D, and where they cut the line *b e*, which line is seen converging to S, will give the perspective recedency of the frame: the heights *r r*, *r r* are drawn to S, the seat of the eye. For the swing of the glass, to produce it perspectively, first draw its slope in the geometrical elevation, as *n n*; and also produce a line from D parallel to *n n*, until it falls in with the perpendicular line S; then where it cuts will be the vanishing point for the glass, as seen converging in the perspective figure: lastly, draw the line D, *m* at right angles to the line above-mentioned, or parallel to the line *n o*; then will *m* be the vanishing point for the ends of the glass. R represents the section of the frame of the glass on an enlarged scale, and *g g* shews the method of finding the vanishing point for the reflection of the frame seen on the glass, which reflection is always equal to the angle of incidence. This may clearly be demonstrated by the glass itself; for, if the frame and glass be both brought into

a line with each other, no reflection will then be visible. As glass has no positive colour, it can only be expressed by the reflection of objects on its surface; hence the necessity of reflected perspective.

REMARKS.

This piece of furniture is chiefly composed from the Roman standards and the Egyptian lotus or water-lily. If emblematical ornaments from the heathen mythology were introduced, the figure of Narcissus, who fell in love with his own image seen in the water, for which he pined away, would be very appropriate, to shew us our folly in being too much in love with our own persons; daffodils, into one of which Narcissus changed, columbines, Narcissus flowers, &c. from the vegetable tribe, might make up the rest of the ornaments.

PLATE XVII.

PIER COMMODE AND GLASS.

To draw the perspective representation of this article, delineate geometrically the profile marked P by means of the scale placed along the horizontal line; next produce the floor line F, and then the horizontal line H; assume the seat of the eye E, and set off from it the intended length for the point of distance, as D; lastly, form the elevation of the commode at a judicious distance to the right of the line E. These working data being now settled, proceed to the perspective delineation of the object; that is, first by taking the breadth of the profile, and setting it from *n* to *n* and *r* to *r*, and from thence producing those divisions to D, which divisions, by their intersecting the line *n* E, give the required width of the object. The open door is drawn by first describing the diagram above, the radius of which is taken from the perspective opening. To proceed, here describe the greater arc of the diagram equal to the breadth of the door, and on it draw the

PLATE XVII.

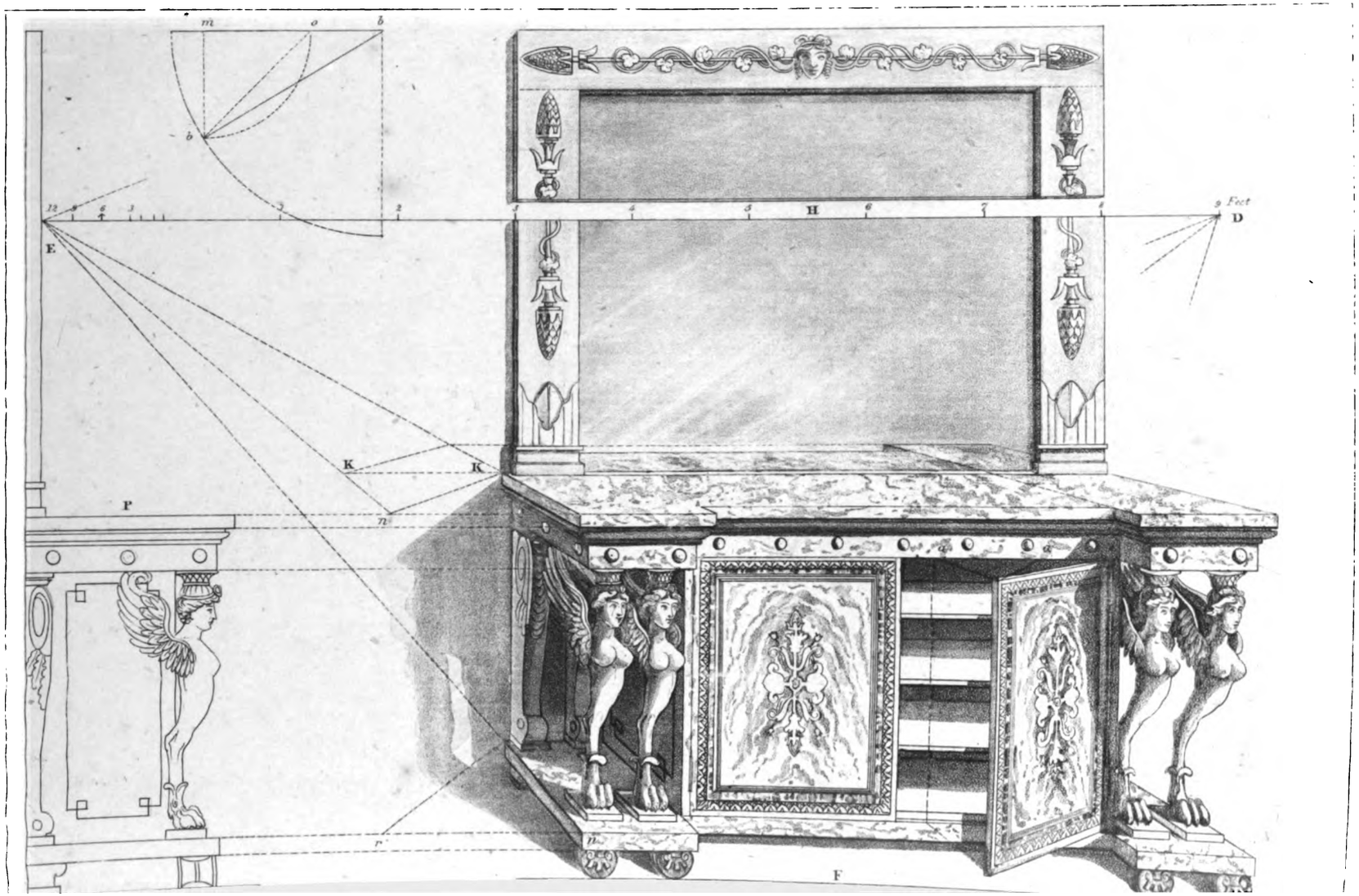
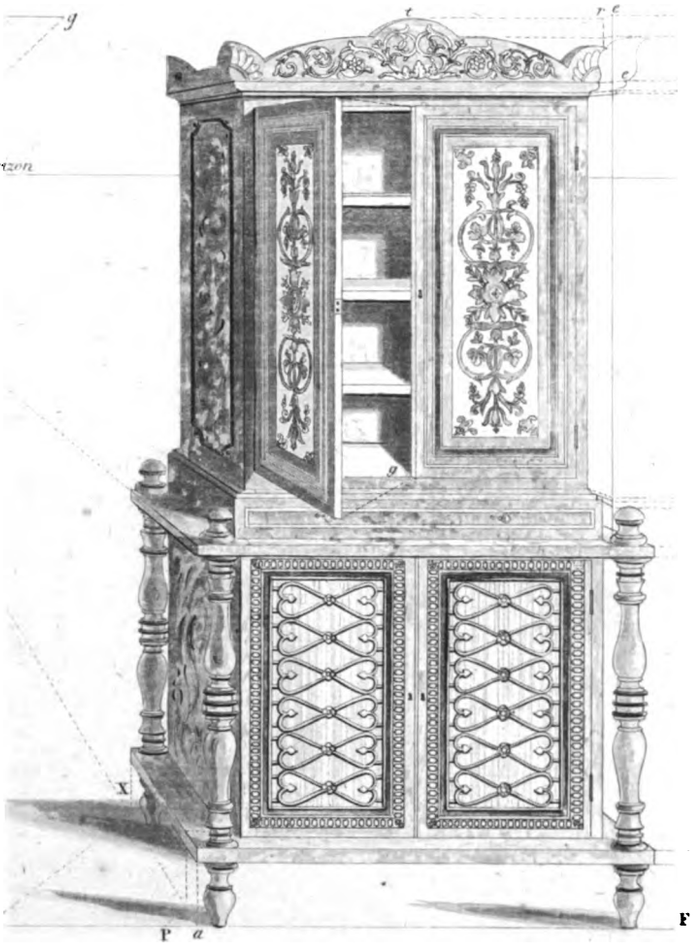


PLATE XVIII.



Ft 6 5 4 3 2 1 0 6 12 In

intended position the door is to open at, as *b b*; then draw the vertical line *b m*, and on *m* as a centre describe the lesser arc; then through it produce the diagonal dotted line; lastly, take the points *m o b* at the diagram, and set them to *i a a*, the perspective object: next produce lines from *a a* in the direction of E and D, and the point of the triangle will give the projection of the door as shewn perspectively in the above position. The lower corner of the door is ascertained by means of a line drawn down by E. The reflection of the top of the commode on the glass is obtained by drawing out the line K K horizontally, and again drawing it back to D, and from thence parallel to the surface of the glass, which completes the article required. Observe, the looking-glass is shewn with a piece cut out of its middle, because there was not sufficient height on the Plate to draw the entire height.

REMARKS.

The commode is a word of French origin, and an article of furniture for convenience, placed against piers in a withdrawing-room, ornamented sometimes with Chimæras, at others either with consoles or turned pillars. As a glass is fixed to this article, the Graces would here be consistent; or the household gods may be introduced: for their character see Spence's *Polymetis*. The glass frame is here adorned with a thyrsus, in the centre of which is a Water-nymph, that element being first discovered to reflect, and resorted to for viewing the face; afterwards succeeded by polished steel, and now by silvered glass.

PLATE XVIII.

LADY'S BOOK-CASE, WITH CABINET.

To delineate scenographically this article, after the front and end are formed geometrically by a scale, the student must first draw the floor line F; secondly, the horizontal line H; and next fix the seat of the eye S, from which he must set

off on the horizontal line the representative point of distance, as D: then produce *a* to S; and *a*, P, P, which is the measure of the end, produce to D; then will X be the perspective measure of the end, which measure is now to be carried up perpendicularly. For the cornice, produce *e e*, *e e* from the elevation, and at *e* form the fan corner geometrically; this then draw to *r*, which will give the perspective point, and if carried to *t*, will also give the summit of the centre from which the cornice is to be formed on the perspective elevation. R B represents a diagram developing the principles of perspective as applied to open doors: for example, suppose *n h* the geometrical form of the door when open, and *n g* the width when shut: hence *g h* will evidently be an angle of 45 degrees. Now, as to the perspective application of this problem, it is evident that if *g* at the elevation represent *g* at the diagram, and the line be projected forward from D *g*, then the door must be opened forward from S, and where the line *g* and the door come in conjunction with each other, will be its perspective breadth, and, if carried up, will form the edge of the door: finally, the top is drawn by S and D. W shews the slider pulled out to write upon; the perspective operation of which is plain to inspection, being the same as that for the door above. The workman must here be cautious not to apply the scale to the upper compartment of this article, because the book-case part receding or falling back from the cabinet, becomes diminished both in height and breadth, from the diminution of its real geometrical measures.

REMARKS.

The book-case part of this article, especially the pediment, may be adorned very consistently with a laurel-wreath contended for by two Genii, which ornament may be seen on the back of the library chair; or the bust of Pallas may be placed on the pediment, with the emblem belonging to the son of Latona below. As the cabinet is intended to contain ladies' jewels, ancient medals, and precious stones, with other valuable curiosities, Plutus, the god of riches, if figures are to be introduced, is proper for this part.

PLATE XXX.

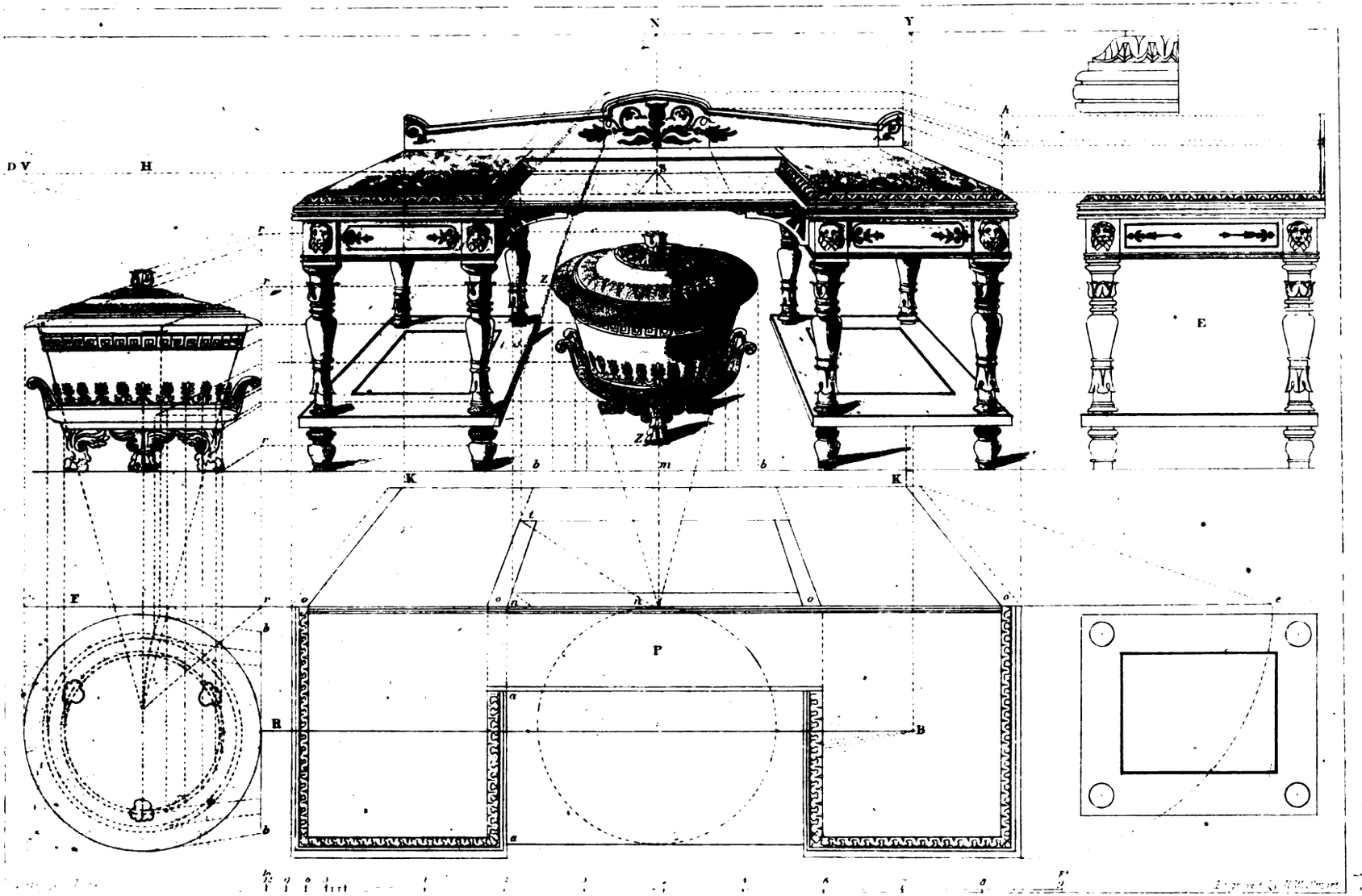


PLATE XIX.

A SIDEBOARD.

To delineate this sideboard scenographically, after the end elevation E and plan P are drawn, produce the horizontal line H, which line is here placed 5 feet 6 inches from the floor line marked F; next set off from S, the seat of the eye, the diagonal vanishing point D V, and produce lines from the plan *o o o o* to S; then circle round the end *o e*, and from thence produce *e* to D V, the diagonal vanishing point; this will then give the width of the perspective plan: next take *a a*, and set it to *n n*, which also draw to D V; lastly, from the line *t* draw a line horizontally, and the plan will be completed. From this perspective plan the angles of the top and legs of the sideboard are to be produced. To obtain the apparent convergency of the top and height of the back-board, take the height F, H, and set it up from *m* to N, as another horizon; then if horizontal lines be drawn from the end E to *h h*, and again drawn to N, the intersections with the line *u* brought up from the plan K will give the perspective height of the back, which is again drawn horizontally, thereby completing the general and principal parts of the sideboard. To delineate perspectively the cellaret underneath the sideboard, from the subjoined geometrical seat and elevation first draw the line of projection *b b*, and take the length of the line of distance S, D V, and mark it from R to B; then will B be a station point for drawing the occult lines *b b*, &c.: finally, set off those lines to *b* |*b*, the perspective object, which divisions draw perpendicularly; then carry up B to the horizon, and by Y obtain the visual lines *r r r r*; these lines now produce to *z z*, and the mutual intersections with the vertical lines *b*, *m*, *b*, will complete the perspective representation of this object.

REMARKS.

A sideboard should be adorned with masks of Bacchus, the god of wine; the horn of plenty would likewise be appropriate. In the back-board may be inserted the thyrsus, or sceptre of Bacchus, a very beautiful ornament when introduced with his mask in the centre. The cellaret should be ornamented with

vine-leaves and clustered grapes, serpentined or festooned; also water-leaves and lilies. A very suitable ornament for this article may be seen in Desgodetz's *Views in Rome*, taken from the tomb of Bacchus, of Bacchanalian youths gathering grapes. Cellarets are often erroneously called sarcophagus wine-coolers, when they possess nothing of that form.

PLATE XX.

A COT-BED.

To represent this article perspectively, first, by the scale above, lay down the geometrical details according to the respective measures of the object; namely, the end E, and the side S; then proceed by drawing the floor line F, and the horizontal line on which the scale is formed parallel to it—here the horizontal line is 5 feet 5 inches from the floor, as before; after this fix the vanishing point, as V, and set off from it the parallel distance of the foot-standard F, and lastly, the representative point of distance, or diagonal vanishing point, D: these measures, it is at all times to be observed, are left to the judgment of the artist, there being no precise rules to govern them. The working points being now arranged, proceed to the perspective formation of the object: to do this, draw the line F, V, and take the equal-sided measures of the foot-standard, and place them from F to B; these divisions afterwards draw towards the diagonal vanishing point D, and their intersection on the line F, V will be the perspective seats of the upright part of the standard, as *a a a a*, those points are from thence to be drawn vertically. To find the perspective length of the frame of the cradle and the canopy, produce the parallel lines *e e e* to their correspondent line *h*, and from this line next produce them to V; then their mutual intersections with the upright lines will be so many points thrown into perspective, by which the standard is to be formed. The canopy is formed on the same principle; namely,

PLATE XX.

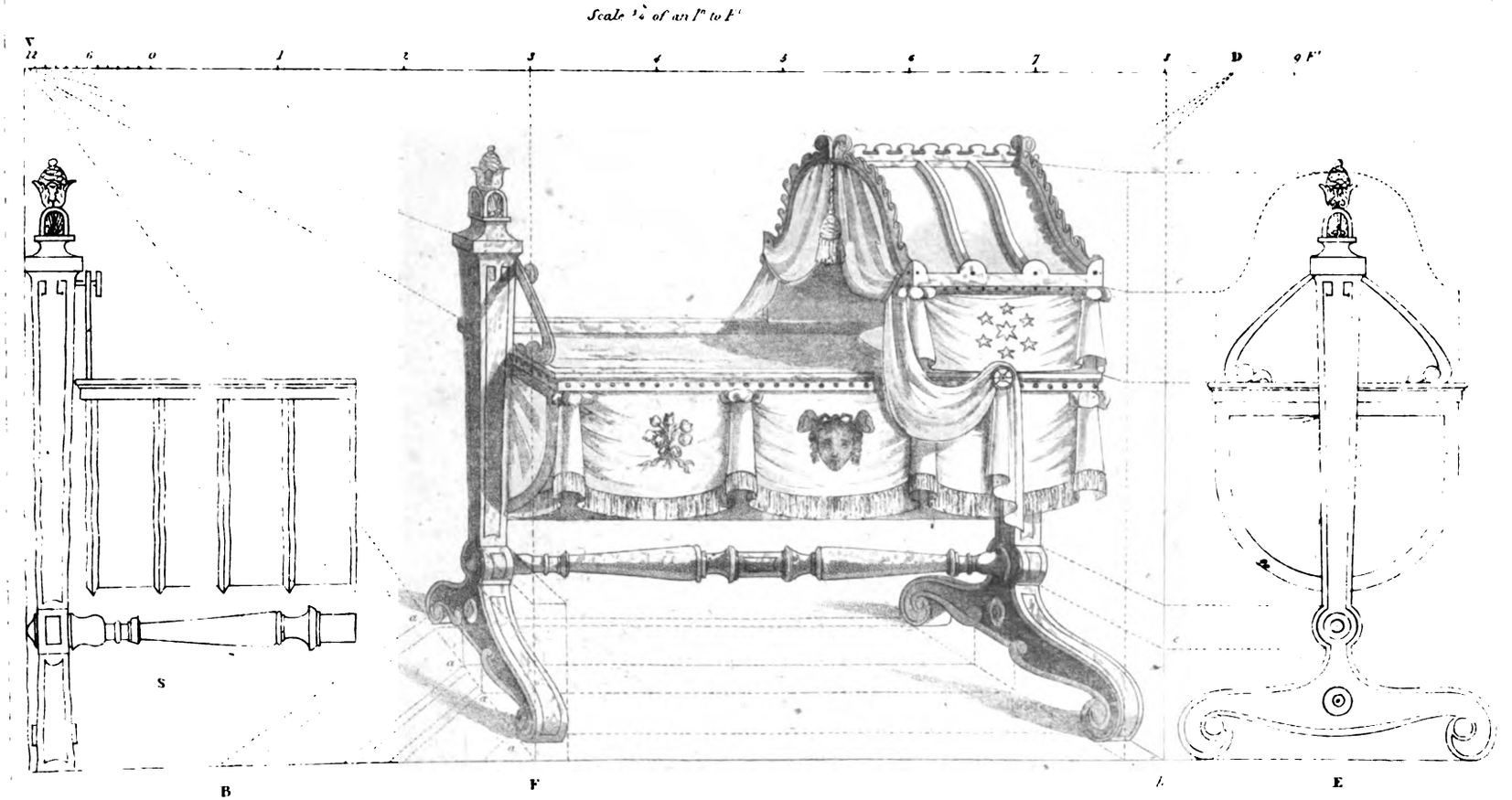
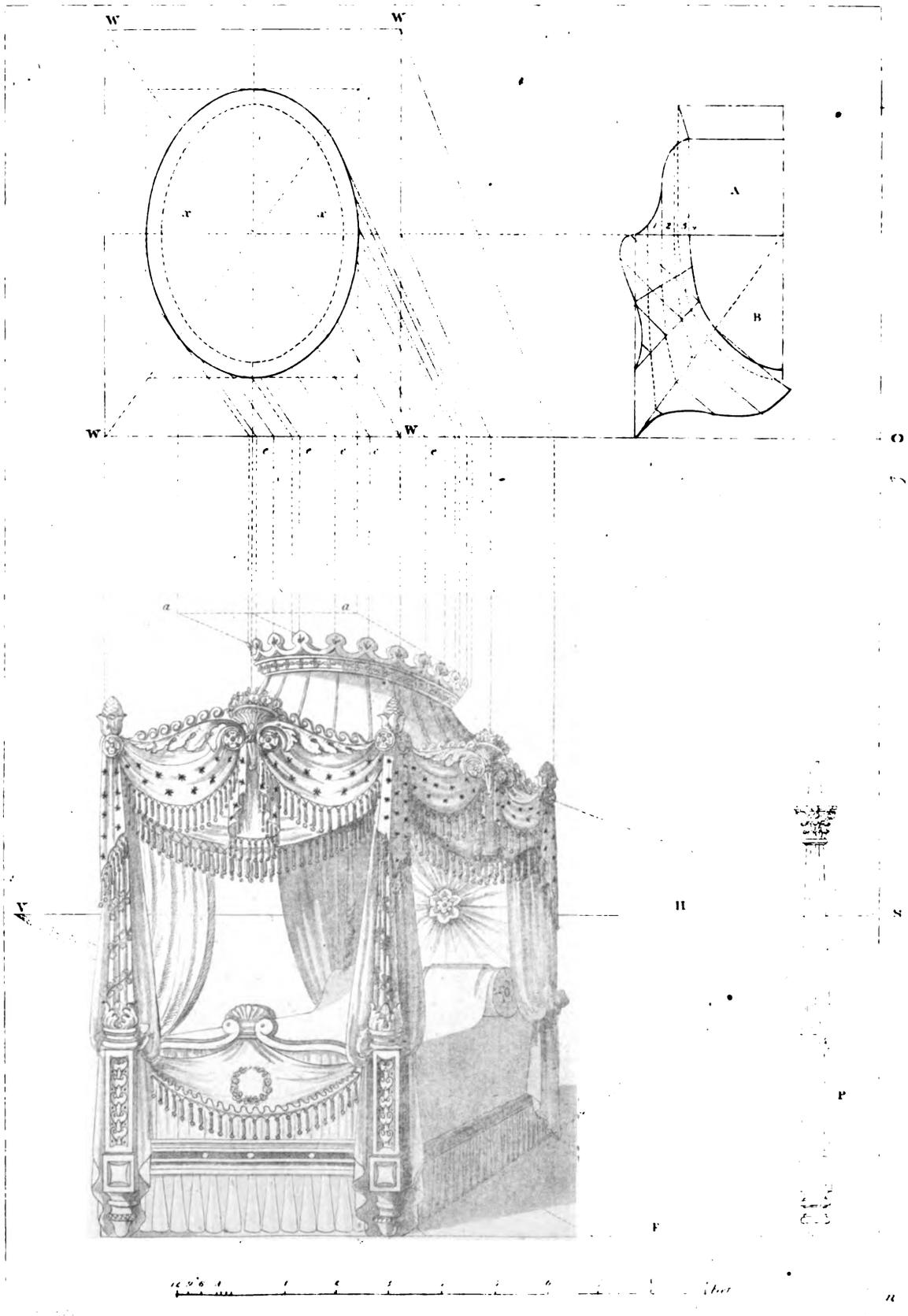


PLATE XV.



by finding a sufficient number of points on the floor, and from thence drawing them up to the object, to fall in with their corresponding horizontal vanishing lines, or ordinates. As the details of an object will depend on the eye and judgment of the draughtsman, particular attention and consideration must be paid while drawing the curves of mouldings, that they may range to their proper vanishing point.

REMARKS.

The cradle or crib in which infants are lulled to sleep, affords many consistent ornaments. The present design has a head of Nox, the goddess of night, who, says Mr. Spence in his *Polymetis*, has sable wings. The stars, as harbingers and attendants on Night, are introduced and placed on the canopy. To the left is a bunch of poppies, which crowns this deity, and produces sleep; or other soporiferous plants may with equal propriety be substituted. Coral and bells; Fabulinus and Educa, the god and goddess of infants; Somnus, the god of sleep; Morpheus, the god of dreams; guardian angels, the dove, nightshade, &c. are all appropriate, and may therefore be occasionally applied to this piece of infantine furniture. White drapery to cot-beds, observe, is at all times most proper, being emblematical of innocence.

PLATE XXI.

A FOUR-POST BED.

This plate contains a bed with an approximate bell-form dome, and surmounted with an earl's coronet, represented in parallel perspective. Here the bed is shewn covered with its drapery, although it is absolutely necessary the student should first draw the naked bedstead, or at least be acquainted with its skeleton appearance, upon the same principles as a painter should understand the anatomy of the bones and muscles of the human frame, to enable him to give the true expression to the figure. This being the last article of household furniture except

one, it is now presumed that the student understands the application of perspective to any object, however difficult; I shall therefore confine myself to a very limited description of this plate. First, draw the plan of the bed as shewn at W, W, &c. above; next, the elliptical curvature of the coronet which crowns the dome—for this the diagonal lines W, W, &c. with the internal square, will give the proportional ellipsis required; assume the station point, as *n*, and towards this draw the visual rays, to cut the line of projection; secondly, draw the floor and horizontal lines parallel to each other; then take the distance *n o*, and set it from S, the seat of the eye, to V, the vanishing point; to this point now draw the measures seen on the floor line F, and where they cut the converging line S will give the perspective length of the bedstead: finally, the visual rays are brought down from the line of projection, as *e e*, and the points *a a* are produced to the seat of the eye S, and where they meet their corresponding visual lines are points through which to trace the inclined curvature of the coronet, thereby completing the bed. The diagram A B shews how to trace correctly the ribs for a bell-form dome.

REMARKS.

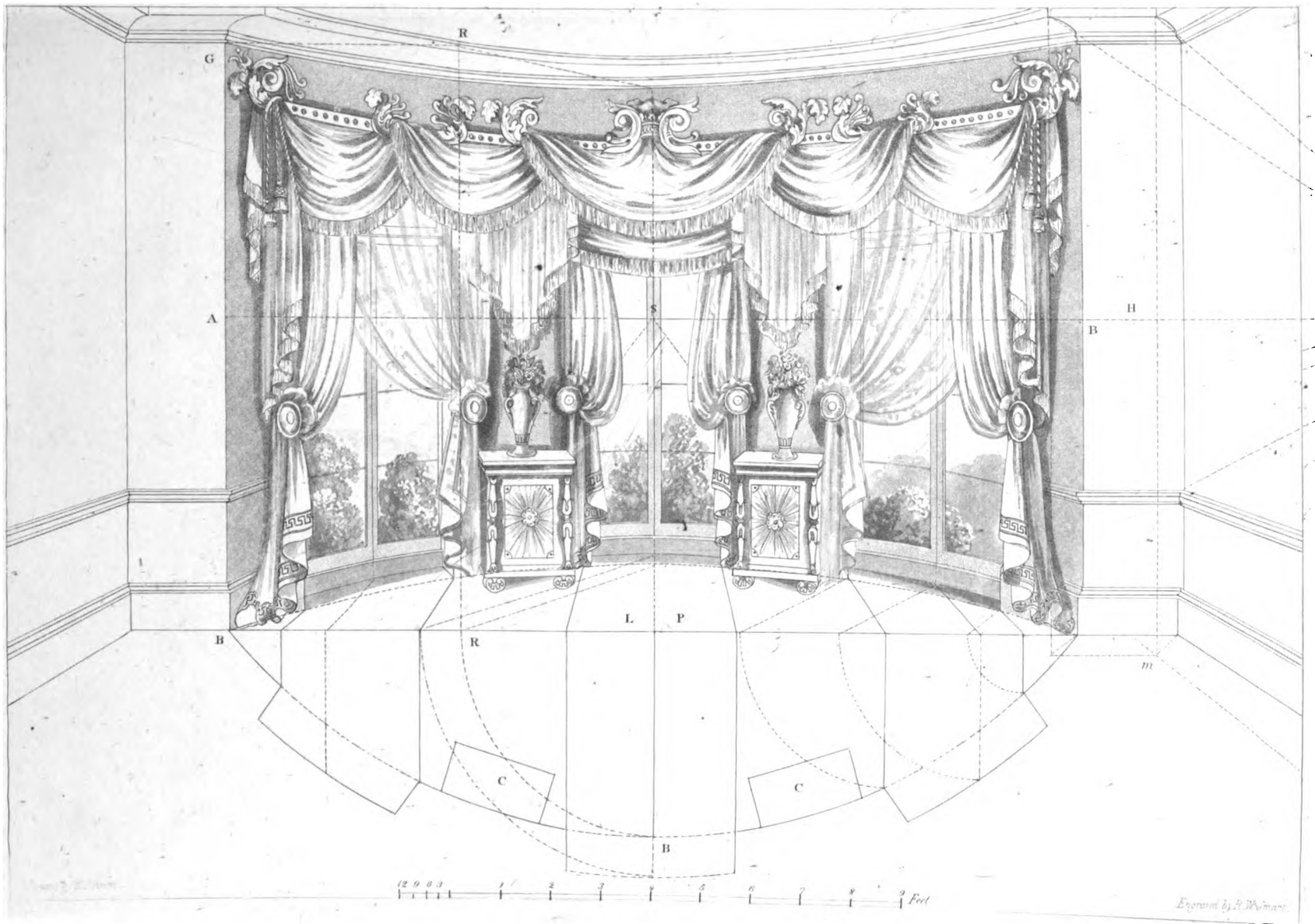
The ornaments appropriate to this article of furniture are, wreaths of night-shade, as seen under the coronet and at the foot of the bed; stars on the drapery; a mask of Somnus, the god of sleep; the starry hyacinth, the great Arabian star-flower, and the night-blowing Cereus.

PLATE XXII.

DRAWING-ROOM WINDOW-DRAPERY.

When curtains are designed for windows on a straight plan, they are generally drawn geometrically; but when the plan is circular or polygonal, they are in that case shewn perspectively. This plate contains a series of windows in a bow room; the process for drawing them is as follows: Describe the geometrical plan B B, which is here a segment of a circle; then draw the seat of the commodes, as *c c*; next draw the chord of the bow L P, and then the horizon S H; take the

PLATE XXII.



width of the bow A B for the distance of the picture as seen from the observer, and set it from S to H, which distance here falls off the plate: now, if intersecting lines be carried up from the seats of the windows to the line L P, and from that drawn to S, and next quadrants drawn on the plan as shewn by the dotted lines, and from thence drawn again to the vanishing points, which extend beyond H, then their mutual intersections will correctly give the plan of the bow as seen perspectively, which is from this to be projected for the perspective elevation. The upper curvature of the bow is obtained by drawing the line G R towards the vanishing point that falls off the plate until it intersects the vertical line S, and then traced through the intersection. The members of the cornice and bars of the sashes are next curvilineally traced in the same manner. The longitudinal sides of the room are quite unnecessary to be drawn in giving a design for the drapery; here they are added to shew a method as practised by Mr. Mackenzie in taking views of interiors, which I am of opinion is a very good one. The application is, that of projecting the sides of the room forward by means of the point of distance, and setting the known measure along the line L P, at the remote end of the room: *m* represents the seat of the mitre of the cornice as got by the point of distance, which is to be carried up to the ceiling.

REMARKS.

Little need be said upon the ornaments appropriate for draperies, more than that those in dining-rooms may have upon the ends of the poles fruit, without a mixture of flowers, which would here be unclassical. The embellishments should be pine-apples, pomegranates, artichokes, or melons, which are indeed generally used for this purpose. The drapery, and testers, for drawing-rooms, must have flowers only, such as the passion-flower, the star of Bethlem, and the rhododendron: for these, and other elegant appropriate flowers, see Dr. Thornton's Botanical Works. The sunflower is much used for this purpose, and there may be something congenial in the name, and I have seen it introduced into the centre of ceilings with good effect; yet it is considered a vulgar flower, and therefore it should never be introduced into elegant apartments.

PLATE XXIII.

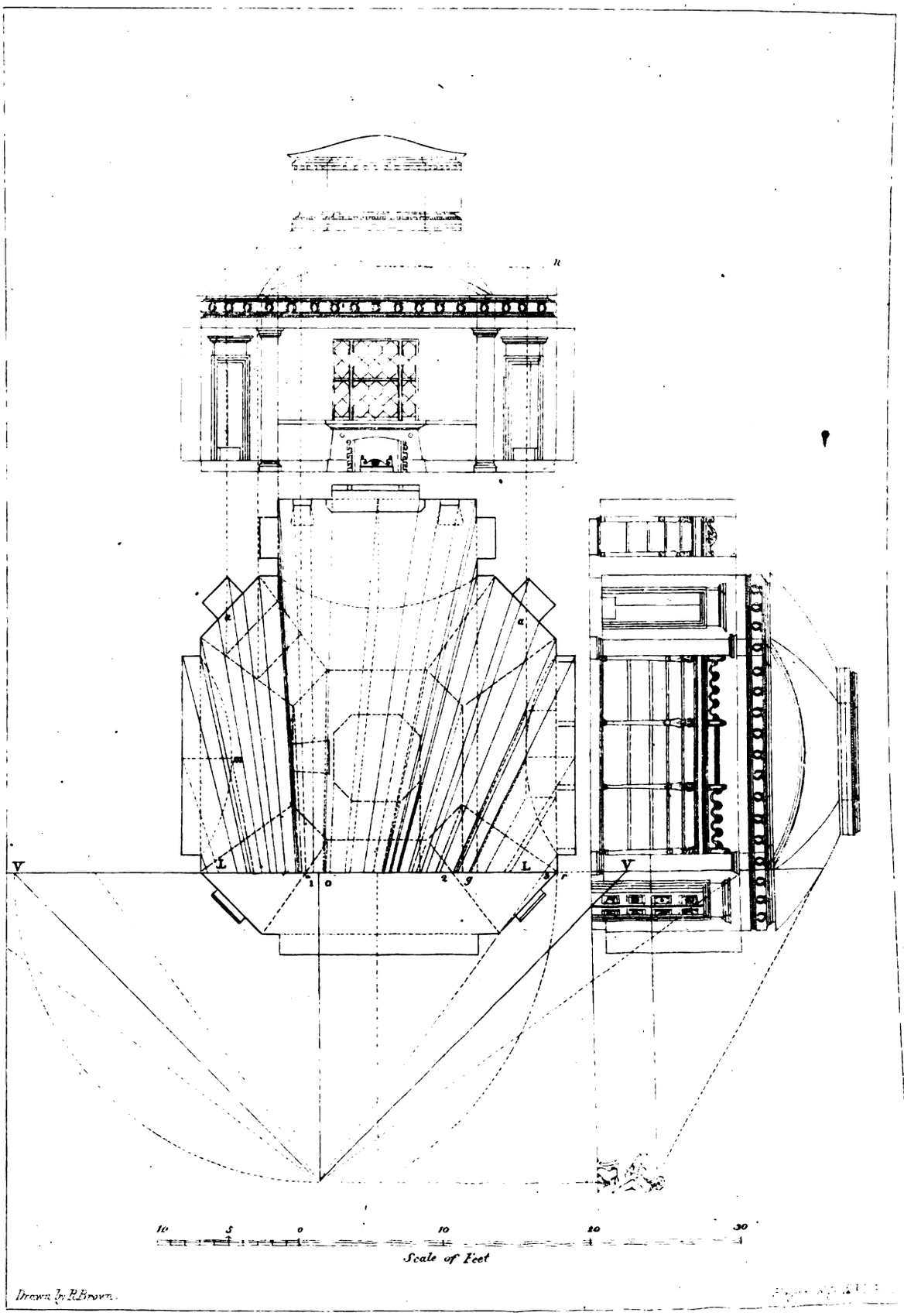
A LIBRARY DEVELOPED.

THERE are two kinds of projection made use of in this work; namely, orthographical and scenographical: Plate VIII. represents the first, which is as an elevation; and the previous and succeeding Plates represent the latter, namely, perspective delineation. There is also a third kind, called ichnographical; such are the seats of objects in general. All designs should first be conceived in the mind, and from thence sketched on paper; after this the respective measures are to be prefixed, and from thence a scale laid down, that will bring in the drawing on paper of a determined size: this being done, lay out the plan, and from that raise the elevation; after this assume the point of distance, or place for the spectator. Observe, that in taking this view, the hither side of the library is supposed to be removed away, or placed behind the draughtsman: this is a licence generally allowed. Next divide the line of projection L L into three equal parts, and from division 1 bring forward the station line: here the point S, with the two extreme visual rays, makes an angle of 60 degrees, being the nearest point we can consistently approach in taking a view: towards S draw intermediate visual rays from all the visible angles of the room; then on the line of projection will be seen their perspective proportions, and *o* will be the vanishing point for the rectangular sides of the library: the vanishing points for the remote octangular sides are determined by drawing two lines from S parallel to the respective angles of the room, as *a a*, until they cut the line of projection, which is at V V. It will also be necessary to find the vanishing points for the angles of the concave ceiling: to do this, draw lines from S parallel to the mitre on the plan: *n* at the elevation shews the crown of the arch at the side, and *m* its seat on the plan, which will both be required in drawing Plate XXIV.

REMARKS.

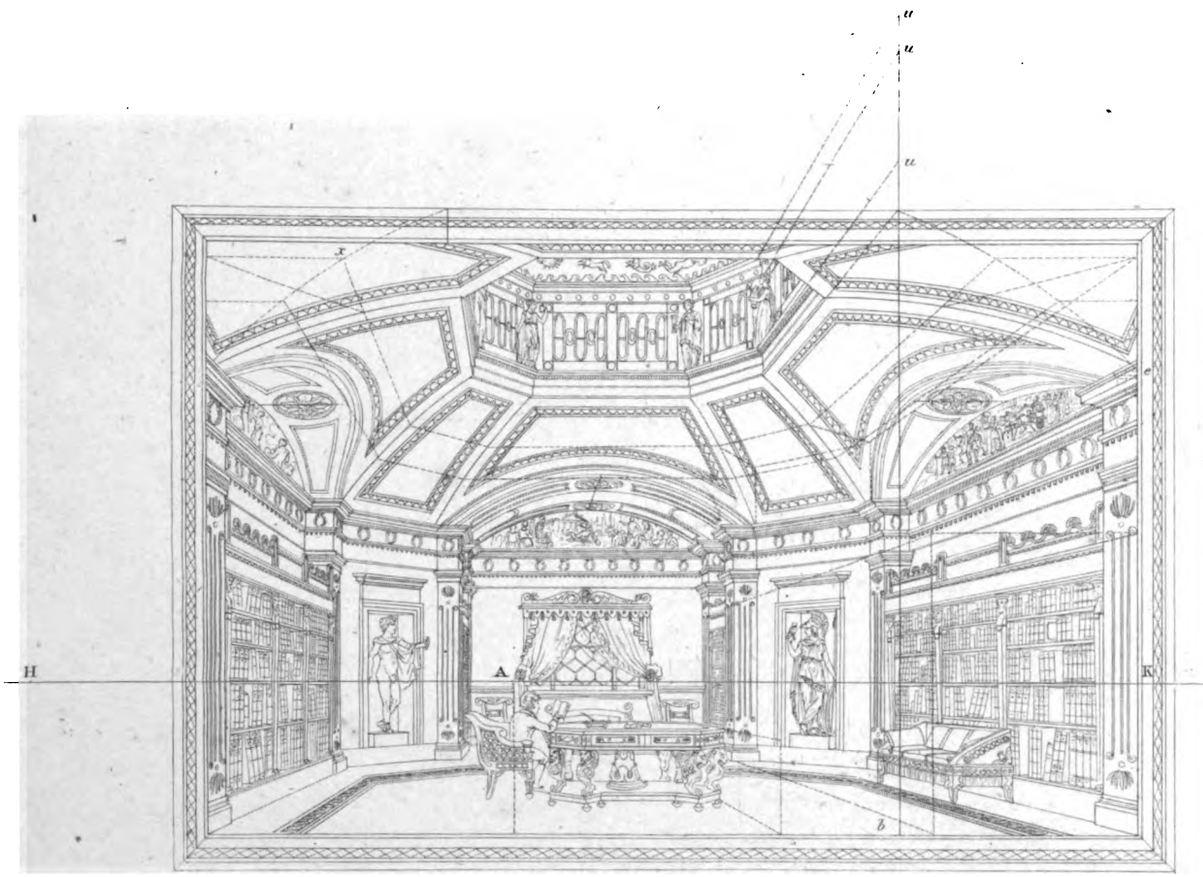
A library should be furnished in imitation of the antique, and with such prints and busts as relate to science and men of literature and genius. The owl and olive-branch as sacred to Minerva, the laurel to Apollo, and Pegasus, the

PLATE XVIII.



Drawn by R. Brown.

PLATE XXIV.



poet's winged horse, may be introduced; also the Olympic games in basso-relievo; Muses supporting the lantern-light above, the twelve signs of the zodiac in the ceiling, and the floor inlaid with mosaic work.

PLATE XXIV.

LIBRARY IN LINEAR PERSPECTIVE.

This plate is four times the square of the foregoing plan; that is, twice as high, and twice as broad. To proceed to the delineation: first take the height of the horizon from the preceding plate, and set it up double that measure, as H; next take *r*, *o* from the plan, set it from K to A, then will A be the centre of the picture to which the rectangular sides of the room converge: here it is necessary to say, it will often be found that the parallel end of the room will not coincide with the remote angles of the room on the right and left sides when they are drawn to A; this arises from an imperfection in the plan, which the slightest variation will make material: in this case it will be necessary to shift the centre A a little to the right, or to the left, before you proceed. Next set up the height of the pilaster, as at *e*, and there form the profile of the cap, which draw to A; the projection of the angles take from their seats on the plan; for the convergency of the octangular end, take the distance *o* V (which distance is equal to the distance of the picture), and set it from A to D; this will give the vanishing point for the inclined side to which the cornice is to be drawn. For the lantern-light, take the intersecting line *g* at the plan, and transfer it to *b*, and on this line set the respective divisions of the lantern, as *u u u*, which draw to A; then where they cut the visual angles, again draw them to their corresponding vanishing points. Lastly, for the concave ceiling, describe with the compasses the original curvature, as *x*; this point then draw to A, and again parallel to the top of the picture-frame; next take the distance of the vanishing point for this angle from the plan, and set it along the horizontal line from A to the left hand; to this point produce the dotted lines, and their mutual intersections will form the angle

of the curve sought for. The other angles are found by the same process of vanishing points, and by a continuation of the lines along the surface of the ceiling.

REMARKS ON TAKING VIEWS.

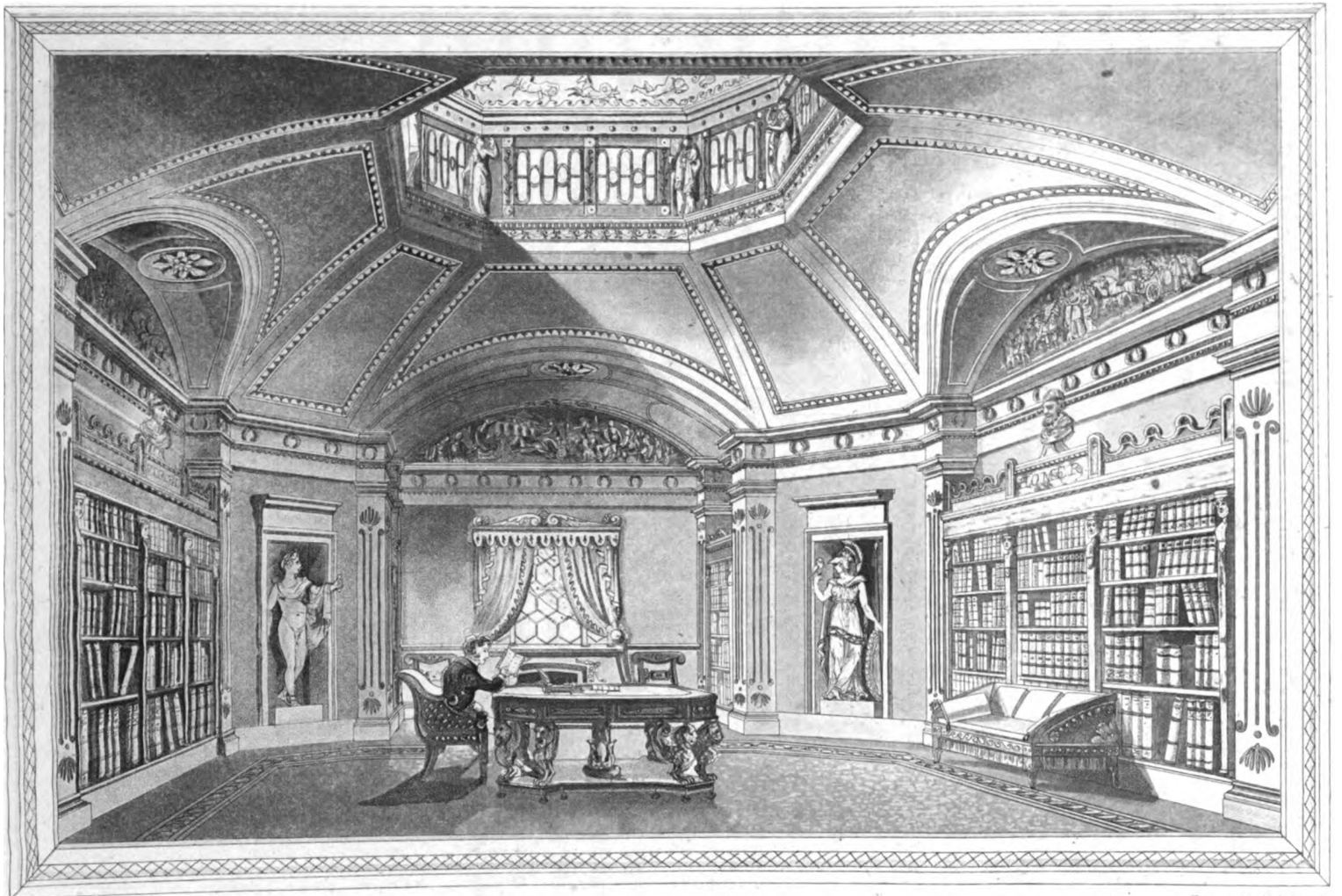
In drawing interiors, such as churches and chapels, the view must always be confined between the gallery or nave, and the aisles only be seen between the columns; for, if the gallery and nave were both taken directly across the church, the colonnade and gallery would then present sections of their timbers as cut through, which must not be expressed in a picture. When the exterior of a building is connected, or formed of one mass, like St. Paul's, or most of the cathedrals in England, the oblique view should be chosen; but if the building be formed with wings, like Greenwich Hospital, or Winchester Palace, then the parallel situation will generally be the best. Parallel views are on all occasions to be preferred for interiors, as they produce the most explicit description of the building, both as to general form and the detail of the parts. The same rule will apply to views of streets.

PLATE XXV.

THE LIBRARY FINISHED.

This plate being a duplicate of Plate XXIV. needs no farther elucidation: I shall therefore in this place give some account of appropriate emblems for a few remaining articles of furniture, not introduced into this Treatise. Fire-screens have a number of analogous ornaments; such as, Jupiter's thunderbolt; Phœnix rising out of the flames; the Cyclops forging Jove's fulmen; Vesta, the goddess of fire, or a representation of Phaëton's descent. Some of the above ornaments may with equal propriety be introduced in grates; likewise serpents vomiting forth fire. And here it may be proper to observe, that to introduce dolphins in grates is highly improper. Fish and swans are applicable to a basin-stand, and an eagle to support a chandelier. Pedestals of statues should have on them attri-

PLATE XCV.



Published & Drawn by H. Brown.

Engraved by R.W.

butes of the heathen deity, poet, or historian, for whom they are intended. Battle-axes, battering-rams, Roman fasces, halberds, and shields, should only be introduced into military apartments. The late Mr. Bullock was the only person who ventured into a new path: though some of his designs were certainly too massy and ponderous, nevertheless grandeur cannot be obtained without it; such are the standards to his octagon tables. There was great novelty without absurdity, as well as a happy relief, in his ornaments: yet many of his articles were considerably overcharged with buhl; sometimes the buhl-work was sunk in brass, and on other occasions the counterpart was of the same wood as the furniture itself, and the whole surface presented a brazen front. He appears to have been peculiarly happy in his mouldings, which were of true Grecian taste, sharp, bold, and well relieved: some members were stained black, while others, for diversity, retained their native colour. His mouldings were elliptically designed, and architecturally proportioned, so that no part might be lost to the eye. Most of his ornaments were selected from British plants, and his woods were of English growth, which were admirably well polished. He has shewn that we need not roam to foreign climes for beautiful ornaments, but that we have abundance of plants and flowers equal to the Grecian, which, if adopted, would be found as pleasing as the antique; but it has been justly observed, that "we are never satisfied with our own opinions, till they are ratified and confirmed by the suffrages of the rest of mankind."

RUDIMENTS OF DRAWING.

DRAWING is not only useful, in a professional way, but with many it beguiles an idle hour; and likewise makes the hours of the happy much happier. The art consists in representing the appearance of objects, either by pencil, or black and white chalk, on some appropriate surface. It expresses the resemblance of any object whatever, and even produces to the inspection of others the conceptions of the mind; which faculty is in its nature so alert and vigorous, that it scarcely ever ceases from action: for, while the senses are in exercise, the mind cannot possibly refrain from observing surrounding objects. Drawing is the very foundation of colouring; though, strictly speaking, it is the delineation of objects upon a plain surface by means of lines suitable to the objects themselves. This art is extensive, as it embraces every thing in nature and in mechanics: consequently it requires long experience and study to be even a tolerable proficient in every department of it. The branches immediately connected with cabinet-work are, geometry and perspective. Although drawing embraces the whole theory of the art; namely, invention, composition, chiaro-oscuro, and even colouring itself; yet the latter certainly seems less within its proper sphere, and perhaps constitutes the chief or only difference: as the friezes in the Vatican at Rome, and others painted in oil, are in chiaro-oscuro, or monochroma pictures; that is, made of one colour, composed of light and shade only.

In this place, drawing is considered chiefly in a practical view, as applied by artists in making their preparatory studies, which consists in various modes of delineating by means of light and dark strokes; reserving the notice of colouring, or those more intellectual qualities which place painting in the same rank with

poetry, for the third section. The art of drawing holds a sort of middle station between painting and writing, possessing some of the advantages of both, and, from the extent and variety of its powers and application, is perhaps one of the most fascinating and most useful of human inventions. Drawing may be divided into *outline* and *shading*: the outline, or contour, represents the boundaries of an object as they appear to terminate against the back-ground, and is a section of the whole mass. Outlines are also used for the circumscription of all the parts of an object, interior as well as exterior; while shading, with a softer pencil, expresses the projections, cavities, or flatness, which form its anterior boundaries.

A correct outline of the objects in a picture is of the highest importance, and certainly the test of an intelligent draughtsman, not only as implying that accuracy of eye on which the art is founded, but in most cases as conveying the general character of the object without the aid of shading; and is therefore of itself a drawing complete as far as it goes. The aim of the student, therefore, should be, to acquire the power of copying faithfully from objects, whatever may be put before him. For the first essay, no material is better to make use of than a soft pencil; the drawing to be made on white paper, and the pencil to be held somewhat like a pen, but so as to allow a greater extent of motion both in the fingers and the wrist. Mengs and Caravaggio judiciously advise the learner to begin with making lines parallel, straight, and curved in all directions, and to exercise himself in drawing geometrical figures, into some of which all forms may be resolved; but to be done without ruler or compasses: he should also copy from broad specimens of ornaments; those being well adapted to give firmness and flexibility to the hand, to increase which, the learner should accustom himself to practise upon as large a scale as convenient. The difficulty of imitating solid bodies, such as plaster-casts, utensils, &c. would at this period embarrass rather than improve the student; he should, therefore, endeavour to procure the best drawings or chalk prints for his early study: the latter are, however, less eligible than drawings, from having a mode of execution in them peculiar to engravings.

Whatever be the object to be drawn, its general form should first be sketched out very slightly, that what is found to be amiss may the more easily be removed: estimate, as nearly as you can, the distances of particular points in the original

figure; make dots at similar distances on your paper; then draw your lines carefully to these dots, beginning at the upper part, and working downward, either from right to left, or in the contrary direction, according to the tendency of the parts: draw in the principal divisions first; when these are apparently right, mark in the smaller parts, and when you have penciled out the whole, examine it scrupulously: then pass over it with a piece of bread, to render the lines nearly invisible, and revise and retouch them, where necessary, again and again, till the whole be correct: after this, go over the object with a harder pencil; or the lines may be put in ink with a sable brush, first comparing particularly all the parts of the copy with the original, both perpendicularly and horizontally, that they may have the same inclination, range, and distance as the real object itself. A pair of compasses or sector may now be used occasionally when the student is at a loss, but very scrupulously, and only by way of proving the angles after he has done his utmost; for the compasses should oftener be in the eye than in the hand. It is always best for beginners to make their drawings of the same size as the originals, to exercise the eye in measuring with exactness; but after some degree of practice, it will be better to vary from these dimensions, that the pupil may acquire an aptness of preserving similar proportions on a different scale, which forms so essential a part of the draughtsman's skill, and also as imitating natural objects is so often indispensable. It is not necessary that the lines of a drawing should be of one uniform thickness; on the contrary, a delicate variety, with the lines sometimes broken, gives a richness and adds much to the agreeableness of the effect: the lines may also be carried a little within the contour of the hollows, as if pursuing the inflection of the part, which, when done with skill, makes a mere outline very characteristic.

RUDIMENTS OF SHADOWING.

After the objects are correctly drawn in outline, the learner is then to begin with the shadows, first laying on the dark broad washes, then the next in strength, and lastly the more delicate half tints: but in finishing or working up, great attention must be paid to the quantities and combination of light, middle tint, shadow and reflection. As to the diversities of the different inclined surfaces, the young student will no doubt find some difficulty in distinguishing the delicate gradation of light and shade, and in estimating the degree of tone belonging to each part: in this case, observation and practice can best teach him. It may be useful, however, to remark, that he must reserve his greatest strength of light and shade for the parts most prominent, and every light must be accompanied and supported by its shade: the middle tint becomes deeper in tone as it advances from the light, till it is lost in the shadow, and the outline is softened into the back-ground by reflections from surrounding objects; the contour, therefore, must not be too strongly marked, otherwise the extreme parts, which should retire, will come forward. A breadth or extension of middle tint is also very desirable in a picture, for it gives repose to the eye, and value both to the lights and shades, which is one of the great principles in the art of painting, literally said to be the system of light and shadow in a picture or drawing: it is something like a gradation or balance, which is necessary even in the slightest sketch to make it agreeable, insomuch that if it consist of two lines only, they should not be equally strong.

Shadows are made out by washing or tinting the drawing with Indian ink, which is never to be mixed up for use a second time after having once dried in

the saucer, as it then works muddy. A neutral tint may likewise be adopted for this purpose, made with Venetian red and indigo, or lamp-black, burnt terra de Sienna, and lake, varied as circumstances and distance may require. Shading may be performed on columns or other convex bodies in two different ways: the one is, that of laying on the shades, as nearly in their places as possible, with a tint very nearly dark enough, then softening off the edges with a clean brush with water, and when dry, repeating the process again and again till sufficiently heightened; the other is, by working with tints rather lighter than is requisite, at first laid in spots near each other, and then blended by a faint wash over the whole, and when nearly dry strengthened by other spots in the interstices, and so on, gradually giving the shades their due force and form, leaving the paper for the lights. This mode is called *stippling*, and in the hand of a master is perhaps much the best, or boldest at least, for finished drawings; for it not only occasions the whole picture to sparkle, but gives a transparency and play to the shadows, making, as it were, "darkness visible." The first method produces a very smooth appearance, which is preferable for a drawing to engrave from, but not so well for a painting: in both cases, however, it is advisable to work with as large a brush as convenient, and to have a sufficiency of the same tint mixed up at first. But whichever of these methods for shading, or whatever mixture of colours, for this purpose, may be adopted, it is of little importance compared with the faithfulness of the imitation. As to a highly finished drawing, this term is not unfrequently applied to one that is merely elaborate in execution, however deficient in science; but which is strictly applicable to those drawings only in which all the parts of the subject are given with their true relative force and subordination, softness and decision, and so exactly copied in their various effects of relief, that a sculptor might actually model from them, in which, as in nature, you have all the detail, without losing the predominance of the whole. But the chief aim of the draughtsman should be to deceive the eye, and that by the easiest methods: this, though not the true end of painting, is, nevertheless, the art of drawing as a practical part.

In the representations of shadows, the artist should always be careful not to make them too hard or abrupt at their edges; because every shadow terminates

by what is called a *penumbra*, which is the faint and indistinct transition from the obscure to the illuminated part of the surface upon which such shadows are cast: nor should shadows every where be equally dark; for it is to be remembered, that shadows projected by the sun are softened by the surrounding rays, and by the general diffusion of light through the atmosphere; therefore, they should be darkest near the object that produces them. It is from this circumstance, that shadows produced by the light of a candle are darker than those projected by the sun, although the light is less forcible from the former than the latter agent: hence it follows, that shadows in candlelight pictures must, in the language of painters, be represented heavier, or less transparent, than in those of daylight.

It is also to be borne in mind, that decided shadows projected from objects in a room, as produced by the sun's rays, must never be introduced into works of the higher classes of art; on the contrary, they should be described as produced by a diffusion of light introduced from some particular part, or through some unseen aperture. This has been the practice of all the great masters, and therefore needs no other recommendation than a reference to their works. Shadows from furniture in a room, are always penumbras, unless when the articles are placed near the windows, and the sun shines in upon them.

RUDIMENTS OF COLOURING.

THE student, it is supposed, has now attained a sufficient knowledge of drawing to be able to portray any object he sees, his fancy may invent, or his employer suggest; for, without this early attention to the imitative arts, his endeavours to rise to eminence will be considerably impeded. Colouring is the third and last component, as well as essential, part of a picture; it is that of giving to objects on paper their proper hue and strength of colour, as they appear under all the various combinations of light, middle tint, and shadow; and also of blending and contrasting them, so as to make each appear with the greatest advantage and beauty; at the same time contributing to the richness, the brilliancy, and the harmony of the whole picture. It likewise possesses powers which, when judiciously applied, render it highly conducive to the character and expression of the subject represented. Colouring is certainly necessary to the artisan, as, without it, he cannot make his representations complete; for, as a judicious writer observes, "Should the most skilful master draw a rose or grape with the pencil only, he would have but a faint or imperfect image of the object: but let him add to each its proper colours, and we no longer doubt; we smell the rose, we touch the grape."

Colouring may be divided into two kinds: that which is necessary for rendering the imitation just and intelligible; and that which is fascinating, and contributes to make the work more impressive on the imagination, as well as more delightful to the eye. Truth alone in the local tints is required in the first: the second demands choice in their selection; for the eye has the same intuitive abhorrence of unharmonious combinations of colours, as the ear has of discordant sounds. To have a scientific knowledge of the arrangement of colours, so as to

produce effects not unnatural, requires no great talent; but to perform all that can be done by the most skilful application and union of the various powers of colours, is the lot of few.

I shall now subjoin the colours that are to be compounded for imitating in drawings the different woods, metals, marbles, cloths, &c. used in the different pieces of cabinet-work, observing to state the principal colours first.

For imitating *mahogany*, mix light red and burnt umber; shadow this wood with burnt umber:—for *rose-wood*, mix lake and lamp-black; shadow with a stronger tint of the same while wet:—for *satin-wood*, use yellow ochre; shadow with Vandyke brown:—for *bronze*, mix Prussian blue, gamboge, and burnt umber; shadow with Vandyke brown and indigo, mixed:—for *brass*, use gamboge; shadow with burnt terra de Sienna, and stipple with burnt umber: inlaid brass or buhl ornaments may be laid on afterwards with a body colour made of gamboge and whiting:—for *or-moulu*, mix king's yellow and Indian yellow:—for *velvet*, mix carmine and Indian red:—for *green baize*, mix indigo and gamboge: for chair-seats, use vermilion:—for *glass*, mix lamp-black and indigo; shadow with the same:—for *porphyry marble*, mix lake, Venetian red, and ivory-black; afterwards speckle with constant white, and with lamp-black:—for *verd antique*, mix indigo and Roman ochre; afterwards lay on light and dark green spots:—for *Sienna marble*, mix raw terra de Sienna and burnt umber; vein it with burnt umber alone:—for *Mona marble*, mix indigo, Venetian red, and lake; vein it with green and dark:—for *black marble*, mix indigo and madder brown with lamp-black. For *buff colour drapery*, mix gamboge and Roman ochre, or gamboge and a little lake; shadow with the same darker; for the intense shadows mix gamboge and burnt umber:—for *white drapery*, shadow with a mixture of Indian ink and indigo:—for *chintz*, shadow with a mixture of lake and gamboge:—for *crimson curtains*, colour with red lead and a little lake:—for *gilt poles*, shadow with burnt umber and gamboge combined, or with burnt umber and lake, and sometimes with a mixture of lake and gamboge.

As landscapes are sometimes seen through the apertures of windows when a view of a room is taken, some instruction is necessary in this department of art. Now almost every artist compounds colours in a manner peculiar to himself,

although when worked up in a picture, no difference of effect is to be seen from that of others: I shall, therefore, state what I think to be the best and simplest process, and with which I shall close the subject of colouring. After the view is penciled out, begin with the sky: for this use a mixture of Prussian blue and a little lake; begin at the top of the picture, and soften it downwards, but at the horizon add a little Venetian red. The clouds are next to be worked in with a mixture of Venetian red, indigo, and a little gamboge; next with the sky-colour, and a little Venetian red added, cover the whole of the ground, beginning at the front, and thinning it towards the horizon, but observe not to go over *rivers*. Distant mountains are coloured with indigo and lake; near fuscous mountains with indigo, lake, and burnt terra de Sienna; distant parts of the grass are made with indigo, yellow ochre, and lake; near grass is made with burnt Sienna, Italian pink, and indigo; dark touches in the fore-ground are of Vandyke brown, indigo, and burnt terra de Sienna; intense dark touches, of lamp-black and burnt umber; distant trees are made with indigo, lake, and gamboge, shadowed with the same colour made darker; and near trees are coloured with burnt Sienna, gamboge, and indigo, deepened towards the shadowed side. This is all that is required to be known in this branch of the art, and is a complete, though concise, process for painting a landscape.

HOW TO MOUNT DRAWINGS.

For large perspective drawings of rooms, brown Holland or canvass is generally strained on a frame; the drawing is then pasted on it, and afterwards varnished. Small drawings, which are intended to be framed and glazed, or kept in portfolios, are sometimes made on portions of antiquarian or extra thick paper; but more generally mounted on three or more sheets pasted together, exclusive of the drawing itself. The process is as follows: Take two sheets of cartridge paper, each about an inch longer and wider than your drawing; damp the sheets on both sides with a wet sponge, then lay one on your board, and rub it over on the upper side with paste: next take the other sheet, and paste one side of it; then lay the pasted side upon the other sheet, keeping it an inch in from one end, and the same distance from one side of the lower sheet; this now rub down with a cloth; afterwards turn up the two visible edges of the under sheet, and paste them, which also rub down. Next take the third sheet, which must be of the dimensions of your drawing; this likewise paste on one side, and afterwards lay it down on the other sheets, but keeping two of its edges exactly over the two concealed edges of the lower sheet: by this procedure, there will be a greater substance of paste in the middle of the mounting than on its extremities; consequently, the edges will dry long before the middle, which will prevent the paper from being drawn off the board. If the top be found rough when the mounting is dry, rub it over with pumice-stone. Lastly, paste a sheet of drawing-paper upon the mounting, which, when dry, will be ready to receive the drawing.

If a picture be made previously to its being mounted, you must use thin paste, because it is required to dry quickly, otherwise the paste will ooze through the

paper, and injure the colours. If the sheet for the drawing be mounted before the drawing is made, then thick paste is most proper; but in this case, when the sheet is dry, you must well sponge it over before you begin the drawing, otherwise the colours will not adhere. The borders may afterwards be coloured with a mixture of Venetian red and indigo, or with burnt umber and indigo. Vandyke brown and gamboge make a light border; so does bister; tobacco-juice alone produces a very beautiful colour for this purpose.

THE METHOD OF PUTTING UP A FRENCH WINDOW CURTAIN.

See Plate I. *Fig.* 12.

Suppose *p p* to be the pole, and *r r* the brass rod on which the curtain-rings slide: first screw the rack-pulley to the architrave *n;* through this pulley pass the end of the line, which end bring up and pass through the pulley *a;* then run it through the three rings of the left-hand curtain, and tie its end fast to the first ring of the right-hand curtain marked *e;* next take the other end of the line from the rack-pulley, which bring up and pass through the pulley seen at the left-hand end of the rod *r;* carry the line over the rings, and tie a single knot fast to the last ring of the left-hand curtain; afterwards carry on the line, and pass it through the pulley seen at the right-hand end of the rod; here pass the line through the rings as before, and bring it along and tie it fast to the ring *e* of the right-hand curtain, where the first knot was tied; lastly, cut off the superfluity of line, and the curtain will be completed.

METHOD OF MAKING AND USING THE FRENCH POLISH.

Take of mastic one ounce, sandarac one ounce, seed lac one ounce, shell lac one ounce, gum lac one ounce, gum arabic one ounce, and virgin wax quarter of an ounce; these reduce to powder, and put into a bottle with a quart of rectified spirit of wine: after standing some hours, it will be fit for use.

Application.—Make a ball of cloth, and on it occasionally put a little of the polish: afterwards wrap over the ball a piece of calico, which touch on the outside with a little linseed oil; then rub the furniture hard, with a circular motion, until a gloss is produced; finish with one third of the polish to two thirds of the spirit of wine.

Another method of making the French Polish is, to put into a glass bottle one ounce of gum lac, two drams of mastic in drops, four drams of sandarac, three ounces of shell lac, and half an ounce of gum dragon: the whole being reduced to powder, add to it a piece of camphor, the size of a nut, then pour on it eight ounces of rectified spirit of wine; afterwards stop the bottle close, which put near a gentle fire, or on a German stove. The bottle must not be more than half full at the time of dissolving the gums, and the solution should be made in hot sand, for fear of catching fire. The first method is by far the best, and is unattended with danger.

CONCLUSION.

If the principles laid down in this Treatise be fully understood by the cabinet-maker, I have no doubt but, with a little practice, he will be able to delineate any piece of furniture correctly, and also to shadow and colour all such objects, however complex in form or varied in materials; but it is to be regretted that so many are deterred from the study of this useful and elegant art, by idly supposing that nature has denied them those qualities which are necessary for its attainment; not considering, that "whatever man has done, man may do." That many will never arrive at excellence as artists, cannot be doubted; but every one may learn that which is taught by rule, if they apply themselves with a determined mind to the acquirement of their object: if the student, however, enters on his task doubtful of success, and suffers himself to be discouraged by every difficulty that opposes itself, he will certainly never accomplish it, and the fault will be his own. I would address such, for their encouragement, in the words of the illustrious Sir Joshua Reynolds: "That assiduity unabated by difficulty, and a disposition eagerly directed to the pursuit, will produce effects similar to those which some call the result of natural powers. You must not, therefore, wholly depend on your own genius: if you have great talents, industry will improve them; if you have but moderate abilities, industry will supply the deficiency. Nothing is denied to well-directed labour; nothing is to be obtained without it."